

COUNTY OF UNION

DEPARTMENT OF ENGINEERING, PUBLIC WORKS & FACILITIES MANAGEMENT
Joseph A. Graziano Sr., Director

**BOARD OF
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Clerk of the Board

THOMAS O. MINEO, P.E.
*County Engineer,
Director, Division of
Engineering*

MEMO TO: ALL PROSPECTIVE BIDDERS

FROM: Thomas O. Mineo, P.E.
County Engineer

DATE: October 5, 2017

RE: CLARIFICATION NUMBER 1
BA#63-2017 – Wheeler Park Pool House
Demolition and New Construction
City of Linden, County of Union, New Jersey
Union County Engineering Project #2014-029

Please note the following Clarifications for the above referenced project:

DRAWING CLARIFICATION:

Item 01: Sheet C-7, 'Overall Site Plan and 3D Views' noted in the Drawing List is not included in the construction plans for this Project.

CONTRACTOR QUESTIONS AND RESPONSES:

Item 02: Question: Plans call for two Pavilions, they're no specifications or foundation plans for those structures, do you have that information?

Response: Detail #6 on Sheet A-430 includes the specified manufacturer and model number.

Item 03: Question: Gametime equipment on plan, when I called for pricing they stated that the County was buying the material direct. It's not noted as such on the plans, is the site gametime equipment supplied by owner?

Response: Refer AQ Drawings (AQ-101 thru AQ-113) have a typical note on ALL drawings which states: 'NOTE: Spray Park Water equipment features (parts list) to be purchased by owner and installed by contractor'. Specification section 13 12 15.1, Article 1.2.A states: 'Exterior Water Play Equipment, some items purchased by owner and installed by contractor, coordinate with drawings' (these would be the AQ drawings).

DIVISION OF ENGINEERING

**SPECIFICATIONS
FOR
WHEELER PARK POOL HOUSE
DEMOLITION AND NEW CONSTRUCTION
CITY OF LINDEN, COUNTY OF UNION, NEW JERSEY
BA#63-2017; UNION COUNTY ENGINEERING PROJECT #2014-029**

SEPTEMBER 2017

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CLERK OF THE BOARD
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COUNTY MANAGER
Alfred J. Faella

**DEPARTMENT OF ENGINEERING, PUBLIC WORKS AND
FACILITIES MANAGEMENT**

Joseph A. Graziano, Sr., CPWM, Director

**COUNTY ENGINEER
DIVISION OF ENGINEERING**
Thomas O. Mineo, P.E.
2325 South Avenue
Scotch Plains, New Jersey 07076
Telephone: (908) 789-3675
Fax: (908) 789-3674

**PREPARED BY:
USA ARCHITECTS PLANNERS AND INTERIOR DESIGNERS**

20 North Doughty Avenue
Somerville, New Jersey 08876
T: 908-722-2300
F: 908-722-7201

**WHEELER PARK POOL HOUSE
DEMOLITION AND NEW CONSTRUCTION
CITY OF LINDEN, COUNTY OF UNION, NEW JERSEY
BA#63-2017; Union County Engineering Project #2014-029**

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**COUNTY OF UNION
NOTICE TO BIDDERS**

Sealed bids will be received by the director of the Division of Purchasing, or her designee, at the County of Union, New Jersey on October 13, 2017 at 10:30 a.m., prevailing time, in the 3rd Floor Conference Room, U.C. Administration Building, 10 Elizabethtown Plaza, Elizabeth, New Jersey for:

**WHEELER PARK POOL HOUSE
DEMOLITION AND NEW CONSTRUCTION
CITY OF LINDEN, COUNTY OF UNION, NEW JERSEY
BA#63-2017; UNION COUNTY ENGINEERING PROJECT #2014-029**

Bid Packages may be obtained at no charge by registering and downloading at <http://ucnj.org/bid-specs>. Bid Packages may also be obtained in person from the Division of Engineering at 2325 South Avenue, Scotch Plains, New Jersey 07076 between 8:30 a.m. and 4:00 p.m. weekdays upon payment of a non-refundable money order or bank check in the amount of \$275.00 made payable to the County of Union. No Personal / Company checks will be accepted. Requests for mailing of specifications will not be honored. For further information please call 908-789-3675.

Bidders on this project are required to be classified by the State of NJ, Division of Property Management and Construction (DPMC) under classification(s) # C008 or C009 as well as other documentary requirements in the INSTRUCTION TO BIDDERS found in the bid specification. If the Bidder himself does not have the required classification(s) as stated above, the Bidder must include and identify a subcontractor(s), of any tier, who has the required classification(s) in the List of Subcontractors.

The County reserves the right to reject any and all bids and to waive any and all informalities in the bid.

Bids shall be submitted in a sealed envelope and clearly marked with the subject of the bid, name and address of the bidder, phone & fax number, and date of the bid opening. Each bid must be delivered to reach the Division of Purchasing prior to the stated time of the opening of the bids. The County will not be responsible for late delivery by the U.S. Mail or any other carrier. If hand delivered, please note that parking and security access at the County Complex may cause delays and bidders should take them into consideration in order to submit a timely bid. **No** late bids will be accepted.

Bidders are required to comply with the requirements of N.J.S.A. 10:5-31 et seq. and N.J.S.A.C. 17:27.

Laura M. Scutari, QPA, MPA, Director of Purchasing

**UNION COUNTY BOARD
OF CHOSEN FREEHOLDERS**

We're Connected to You!

NB-1

**UNION COUNTY BOARD OF CHOSEN FREEHOLDERS
INSTRUCTIONS TO BIDDERS AND FORMS**

DEFINITIONS

Wherever reference is made to the County, Title of Project, Bidder, or Vendor/Contractor they shall be as follows:

OWNER/COUNTY:

Union County Board of Chosen Freeholders
UC Administration Building, 6th Floor
10 Elizabethtown Plaza
Elizabeth, New Jersey 07207

ADDRESS BIDS AND SUBMIT TO:

Union County Division of Purchasing
UC Administration Building, 3rd Floor
10 Elizabethtown Plaza
Elizabeth, NJ 07207
Attn: Laura M. Scutari, QPA, MPA, Director, Division of Purchasing
Telephone: 908-527-4130
Facsimile: 908-558-2548

**TITLE OF PROJECT: Wheeler Park Pool House – Demolition and New Construction
City of Linden, County of Union, New Jersey
BA#63-2017; Union County Engineering Project #2014-029**

BIDDER: Bidder shall be a single overall contract bidder

**ARCHITECT/ENGINEER: USA Architects Planners and Interior Designers
20 North Doughty Avenue
Somerville, New Jersey 08876**

COUNTY ENGINEER AND/OR CONSTRUCTION MANAGER (as applicable):

COUNTY ENGINEER:

Thomas O. Mineo, P.E.
Union County
Division of Engineering
2325 South Avenue
Scotch Plains, NJ 07076
Office: (908) 789-3675
Facsimile: (908) 789-3674
Email: tmineo@ucnj.org

CONSTRUCTION MANAGER:

GENERAL SPECIFICATIONS

1. BID FORM

Bids for this Work will be enclosed in a sealed envelope addressed to the Purchasing Division, County of Union, New Jersey, Union County Administration Building, 10 Elizabethtown Plaza, Elizabeth, New Jersey 07207, with the full name of the Project clearly marked on the outside. Refer to the sheet marked "Notice of Bid (Advertisement)" for the correct name of the Project. Bidders must submit their bids on the attached pricing sheet (Bid Form), in a sealed envelope addressed to the County and bearing on the outside: the name of the Bidder, Bidder's business address, and the title of the Project.

The Division of Purchasing will receive the bids for this Work at the Union County Administration Building, 10 Elizabethtown Plaza, Elizabeth, New Jersey on the date and time noted on the sheet marked "**Notice of Bid (Advertisement)**".

The County will not assume responsibility for bids forwarded by mail. It is the individual's responsibility to see that the bids are presented to the Purchasing Division at the time and at the place designated.

Bids will be accepted only on the Bid Form supplied. Bids on forms other than the original supplied herein will be rejected. The "complete" Bid Documents includes the Bid Bond, Bid Form, Bidder's Checklist, Consent of Surety, Ownership Disclosure Certification, Non-Collusion Affidavit, and any other documents noted in these Instructions to Bidders or Contract Document to be submitted with this Bid. (See AIA Owner/Contractor Agreement & General Conditions attached.)

The bidder will state in the bidding sheet the price per unit of measure for each scheduled Item of Work for which he will agree to carry out the Work, and the Total Bid Price for the construction of the Project.

The prices in the Bid Form shall be typed or written in pen and ink. Erasures or alterations must be initialed by the bidder in ink.

The bidding sheet for this Project may include a fixed amount as a Bid Allowance. If applicable, all bidders are required to add this fixed amount to their base bid and to include this additional amount in their Bid Bond. This sum will be included in the Contract as well as the performance, labor and materials bond. Payment by the County will be made to the Contractor from these funds only upon the completion of extra Work pursuant to a written Change Order(s) signed by the County's Engineer or his designee and the Contractor, prior to the commencement of such Work. Work commenced prior to written approval by the County shall be done at Contractor's risk. Such payment will only be in the amount agreed to by the parties, in writing in the Change Order(s). See Section 39, Change Orders, of these general specifications for further details.

Refer to Bid Document Submission Checklist for all required documents.

In the event there is a discrepancy between the unit price given and the extended total, the unit price will govern. Any discrepancies will be mathematically adjusted.

Insert applicable alternates, if any have been specified, applicable to the Bidder's Work. All alternates MUST be bid upon. Any Bidder's failure to do so will be deemed a material, non-waivable defect and shall render the bid nonresponsive. The Bidder shall clearly designate whether the change in price is an addition or subtraction, by using either a "+" sign or the word "addition", or in the alternative, a "-" sign or the word "minus". If there is no other change in price, the Bidder shall insert "NC" or "No Charge".

When two or more low bids are equal in all respects, awards will be made according to the provisions of N.J.S.A. 40A:11-6.1(d).

Where unit prices have already been established by the Contract Documents, the Bidder agrees that such unit prices shall prevail. All unit prices, whether filled in by the Bidder or established by the Contract Documents, shall become part of the Contract. No bid will be considered or award made, unless applicable unit prices, as required, are filled in.

The County reserves the right to reject any or all bids and also reserves the right to waive any informality in the bids received so long as said waiver is not of a response which is considered to be material and non-waivable pursuant to law.

The County of Union has the right to reject any and all bids from any bidder that is in, or contemplates bankruptcy of any chapter of nature. Said bidder shall notify the County, in writing, of any condition or knowledge of the same.

Conditional bids will not be accepted. Bids may be withdrawn prior to the advertised time for the opening of bids or authorized postponement thereof or in accordance with the provisions of N.J.S.A. 40A:11-23.3 discussed below. Bids received after the advertised time shall not be considered. Bidders shall be solely responsible for premature opening or late delivery of bids not properly marked, addressed, or directed.

2. WITHDRAWAL OF BID DUE TO MISTAKE

N.J.S.A. 40A:11-23.3 authorizes a bidder to request withdrawal of a public works bid due to a mistake on the part of the bidder. A mistake is defined by N.J.S.A. 40A:11-2(42) as a clerical error that is an **unintentional and substantial computational error or an unintentional omission of a substantial quantity of labor, material, or both, from the final bid computation.**

A bidder claiming a mistake under N.J.S.A. 40A:11-23.3 must submit a request for withdrawal, **in writing**, by certified or registered mail to Laura M. Scutari, QPA, MPA, Director, Division of Purchasing, County of Union, New Jersey, Union County

Administration Building, 10 Elizabethtown Plaza, Elizabeth, New Jersey 07207. The bidder must request withdrawal of a bid due to a mistake, as defined by the law, within five business days after the receipt and opening of the bids. Since the bid withdrawal request shall be effective as of the postmark of the certified or registered mailing, Laura M. Scutari, QPA, Director of the Division of Purchasing or his designee may contact all bidders, after bids are opened, to ascertain if any bidders wish to, or already have exercised a request to withdraw their bid pursuant to N.J.S.A. 40A:11-23.3.

A bidder's request to withdraw the bid **shall** contain evidence, including any pertinent documents, demonstrating that a mistake was made. Such documents and relevant written information shall be reviewed and evaluated by the County's designated staff pursuant to the statutory criteria of N.J.S.A. 40A:11-23.3.

The County will not consider any written request for a bid withdrawal for a mistake, as defined by N.J.S.A. 40A:11-2(42), by a bidder in the preparation of a bid proposal unless the postmark of the certified or registered mailing is within the five business days following the opening of bids.

3. QUALIFICATIONS OF BIDDERS AND REQUIRED SUBMISSIONS

The County may make such investigation as it deems necessary to determine the ability of the Bidders to perform the Work, which includes investigation of any and all subcontractors listed with the bid. The Bidder shall furnish any information and data for this purpose as the County may request.

4. INTERPRETATIONS AND ADDENDA

Any explanation desired by a bidder regarding the meaning or interpretation of the Contract Documents must be requested in writing to the County Engineer or Design Professional as the case may be and with reasonable time allowed for a reply to reach bidders before submission of their bids. Any interpretation or instruction made by the County Engineer will be in the form of an addendum to the Contract Documents or clarification and will be furnished to all prospective bidders. Oral explanations or instructions given before the award of the Contract will not be binding. Bidders are required to bring to the attention of the County Engineer, the discovery of any apparent ambiguity, inconsistency, error, discrepancy, omission in the Contract Documents for interpretation and correction at least ten (10) working days before opening of bids with the exception of Saturdays, Sundays and holidays.

All Addenda issued through the Offices of the County Engineer are amendments to the Contract Documents and shall be considered in preparing bids. Same shall become part of the Contract Documents.

Addenda take precedence over all earlier documents and over each other according to the latest date. Addenda unless themselves interpretive remain subject to interpretation the same as any other document incorporated in the Contract.

Addenda may be issued by the County Engineer up to seven (7) working days prior to the opening of bids. Failure of any bidder to receive an addendum shall not relieve such bidder from the obligation imposed by such addendum. Bidders are to keep themselves currently acquainted with the Contract Documents during the entire bidding period and make inquiry on their own initiative as to issuance of any Addenda. Receipts of all Addenda shall be acknowledged on the “*Acknowledgement of Receipt of Changes*” included in the bid package and must be submitted with the bid.

5. OBLIGATION OF BIDDER TO INSPECT SITE AND CONTRACT DOCUMENTS

At the time of the opening of bids, each Bidder will be presumed to have inspected the site(s) and to have read, and be thoroughly familiar with the Contract Documents. The failure or neglect of any Bidder to receive or examine any form, instrument, or document shall in no way relieve any Bidder from any obligation in respect to its bid.

The Bidder shall examine the contents of the Project Manual and the set of Drawings and assure itself that all pages of the Specifications, Drawings, and other Contract Documents are included in the documents obtained for bidding purposes. Should the Specifications, Drawings, and other Contract Documents be incomplete, the Bidder shall notify the County Engineer in writing, who will supply the Bidder with any missing pages of Specifications, Drawings, or other Contract Documents. The lack of such written notification by the Bidder will be construed as evidence that the Specifications, Drawings, or other Contract Documents supplied it for bidding purposes are full and complete and as a waiver of any subsequent claim to the contrary.

6. BID AND PERFORMANCE GUARANTEE

Each bidder must furnish a Bid Bond, Certified Check or Bank Cashier’s Check in the amount of ten percent (10%) of the Bid. Checks shall be drawn to the order of the County of Union, New Jersey, not to exceed \$20,000.

Each bidder must furnish with the bid a certificate from a Surety Company, i.e. Consent of Surety, stating that in the event of the contract being awarded to said bidder, such Surety Company will provide the Contractor with Bonds guaranteeing the faithful performance of the Work in accordance with the plans and specifications, and the payment for labor, materials, and all other indebtedness which may accrue on the account of this Work. A Performance, Labor and Materials bond will be furnished by the Contractor upon an award of Contract, and will be in the amount of 100% of the contract price.

A one-year Maintenance Bond will be required upon acceptance of the Project by the County in the amount as stated in Section 17 of the General Specifications. Bonds will be written by a firm authorized to issue the bonds under the laws of the State of New Jersey and be in a form acceptable to the County Counsel.

N.J.S.A. 40A:11-1.1 et. seq. allows the prime Contractor to furnish the Performance Security for his Subcontractors. The County of Union requires Performance Security to be furnished by the prime contractor for the entire job in the total amount of the contract.

The County of Union shall award the contract or reject all bids within sixty (60) days; except that the bids of any bidders who consent thereto may, at the request of the County be held for consideration for such longer periods as may be agreed.

The County will return all certified checks or cashier's checks after the proposals have been opened, read, tabulated and checked except those of the three (3) bidders who have bid the lowest total price for carrying out the Project. The County will return the checks of these bidders when a contract is awarded to the successful bidder within ten (10) days after the award of the contract.

If the successful bidder refuses or neglects to sign the said Agreement and furnish the required bonds, the Bid Bond will be held and used by the County to offset any damages for such refusal or neglect.

7. COMMENCEMENT AND COMPLETION

Work will not commence until a Notice to Proceed is received from the County Engineer.

Upon substantial completion of the Project, the Contractor must request a joint inspection with the County Engineer. Upon completion of this inspection, the County Engineer will prepare a list of incomplete or incorrect items (punch list) and have Contractor initial and date same. The Contractor shall rectify all deficiencies noted on the punch list within 30 calendar days of receipt of the list. The County Engineer may approve extensions for extenuating circumstances.

8. BIDDER AFFIDAVIT

All Bidders are required to complete, sign, and submit with their Bid, the attached "Affidavit Regarding List of Debarred, Suspended or Disqualified Bidders". (See form enclosed)

9. CLASSIFICATION AND QUALIFICATION OF BIDDERS

Pursuant to Ordinance Number 557-2002 as adopted by the County on September 5, 2002, all bidders on contracts for public works shall be classified and qualified in accordance with NJSA 40A:11-25 as well as NJSA 52:35-1 et. seq. (See Section 52 of the General Specifications)

This provision shall not apply to subcontractors.

10. UNCOMPLETED CONTRACTS (BUILDING PROJECTS ONLY)

The Bidder shall submit a current Classification/Prequalification Certificate and accompanying form(s) indicating the dollar amount of uncompleted contracts, and a notarized and itemized list of these uncompleted contracts in the form provided, with their bid. (See form enclosed)

11. BID SECURITY

All Bidders are required to submit a form of Bid Security with their bids.
(Bid Bond or Certified Funds)

The Bid Security shall be in the amount of ten percent (10%) of the Bid, but not in excess of Twenty Thousand Dollars (\$20,000.00), and payable to the order of the "County of Union."

12. LABOR AND MATERIALS

The prices will cover all costs of any nature incident to and growing out of the Work, including all labor, material, equipment, transportation, loss by damage or destruction of the Project, settlement of damages, and for replacement of defective work or materials. N.J.S.A. 54:32B-1 et seq. exempts all materials sold to the County of Union from sales or use taxes and should not be included in the prices provided on the Bidding Sheet.

13. INSURANCE REQUIREMENTS

The County of Union requires all contractors to be able to comply with the following insurance requirements. In the event a bid is accepted by the County, the contractor must accept the applicable insurance requirements, as set forth below, as part of any contract awarded to it by the County.

Contractor shall carry and maintain at all times while the contract is in full force and effect, the following insurance coverage with an insurance company or companies acceptable to the County, with limits not less than those shown below. A Certificate of Insurance, shall be filed with the County prior to commencement of any Work indicating the following:

- a) Commercial General Liability (CGL): Coverage for all operations including, but not limited to, contractual, products and completed operations, and personal injury with limits no less than \$5,000,000 per occurrence/\$10,000,000 aggregate. The County of Union, its Board of Chosen Freeholders, officers, employees, agents and servants shall be included as an additional insured. Coverage is provided on a primary and on-contributory basis to the County of Union, et al.

- b) Automobile Liability: Coverage for all owned, non-owned and hired vehicles with limits not less than \$5,000,000 per occurrence, combined single limits (CSL) or its equivalent.
- c) Workers Compensation: As required by the State of New Jersey and Employers Liability with limits not less than \$1,000,000 per accident for bodily injury or disease.
- d) Professional Liability (if design/build): Coverage with limits not less than \$1,000,000 per occurrence or claim, \$2,000,000 aggregate
- e) Contractor's Pollution Legal Liability and/or Asbestos Legal Liability and/or Errors & Omissions (if project involves environmental hazards): Coverage with limits no less than \$1,000,000 per occurrence or claim/\$2,000,000 aggregate.
- f) Builders Risk (for major renovations): During the course of construction utilizing an "All Risk" coverage form with limits equal to the completed value of the project and no coinsurance penalty provisions.

Where applicable, a waiver of subrogation in favor of the County of Union, its Board of Chosen Freeholders, officers, employees, agents, servants and the State of New Jersey is to be included in those policies of insurance where permitted by law.

Notice of Cancellation: Each insurance policy required above shall provide that coverage shall not be canceled, except with notice to the Entity.

Special Risks or Circumstances: The County reserves the right to modify these requirements, including limits, based on the nature of the risk, prior experience, insurer, coverage, or other special circumstances.

14. INDEMNIFICATION REQUIREMENTS

The County of Union requires all bidders to accept the following indemnification requirements in the event the County accepts their bid. The Contract awarded by the County to the successful bidder will contain the following provision:

"To the fullest extent permitted by law the Contractor shall indemnify and hold harmless the owner and the owner's consultants, agents, representatives, and employees from and against any and all claims, damages, losses, costs, and expenses, including, but not limited to attorneys' fees, legal costs and legal expenses arising out of or resulting from the performance of the Contractor's work under this contract, provided that such claim, damage, loss, cost, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the work itself) caused or alleged to be caused by the negligent acts, negligent omissions, and/or fault of the Contractor, anyone directly or indirectly employed or retained by the Contractor,

or anyone for whose acts the Contractor may be liable regardless of whether caused in part by the negligent act or omission of a party indemnified hereunder provided it is not caused by the sole negligence of a party indemnified hereunder. Contractor shall further indemnify and hold harmless the County and the County's consultants, agents, representative, and employees from and against any and all claims, damages, losses, costs, and expenses, including, but not limited to attorneys' fees, legal costs and legal expenses, arising out of or resulting from performance of the work, provided that such claim, damage, loss, cost, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the work itself) caused or alleged to be caused by the negligent acts, negligent omissions, and/or fault of the County or the County's consultants, agents, representatives, or employees and arises out of this project and provided such claim, damage, loss, cost, or expense is not caused by the sole negligence of a party indemnified hereunder."

15. ROYALTIES AND PATENTS

The Contractor shall pay all royalties and license fees. He shall defend all suits or claims for infringement of any patent rights and shall hold the County harmless from loss on account thereof.

16. PLANS AND SPECIFICATIONS

In carrying out the Work, the plan(s) and the specifications will be followed by the Contractor. Minor alterations in the plan may be made or permitted by the County Engineer from time to time and, if no additional Work is necessary, there will be no additional charge for carrying out such minor alterations.

The Contractor shall provide the County Engineer a set of reproducible as-built drawings upon completion of the Project. The Contractor shall maintain an updated construction progress plan in the Project field office at all times.

When applicable, The New Jersey Department of Transportation Standard Specifications for Road and Bridge Construction, as amended, and Supplemental Specifications for State Aid Projects, herein after referred to as the "Standard Specifications", are made a part of these specifications and contract for the improvements, and will govern the construction of this Project, the material used and the execution of this Project, except as revised and modified herein. The references to these specifications are given herein for the purpose of aiding in the rapid location of the description of the various items herein specified. The entire Work must be carried on and completed to the satisfaction of the County. The Standard Specifications are amended as follows:

"Any reference to the Commissioner, Department, Department Laboratory, Engineer or Inspector should be redefined to be the County of Union".

17. GUARANTEE AGAINST DEFECTIVE WORK

Prior to final payment being made or before the release of the performance security required by Section 3 above, the Contractor and Surety shall execute and deliver to the County an original Maintenance Bond with an original signature and seal having a penal sum equal to:

- A) One hundred percent (100%) of the final adjusted Contract amount, if such amount is \$50,000.00 or less;
- B) Fifty percent (50%) of the final adjusted Contract amount, if such amount be greater than \$50,000.00 but less than \$250,000.00; and,
- C) Twenty-five percent (25%) of the final adjusted contract amount, if such amount is \$250,000.00 or more.

The Bond and Surety shall be satisfactory to the Union County Counsel. The Surety shall hold a Certificate of Authorization to do business in the State of New Jersey and shall conform to P.L. 1995 c.384, codified as N.J.S.A. 2A:44-143, 144. The Surety Disclosure Statement and Certification required by N.J.S.A. 2A: 44-143, 144, shall be attached to the Bond. Such Maintenance Bond shall remain in full force and effect for a period of one (1) year from the date of Final Completion. Such Maintenance Bond shall also provide that the Contractor and the Surety guarantee to replace for the said period of one (1) year from the date of Final Completion, all Work performed and/or all materials furnished that were not performed or were not furnished in accordance to the terms and performance requirements of the Contract Documents, and will make good any defects thereof which become apparent before the expiration of one (1) year. If, during that period, any part of the Project, in the judgment of the Engineer, is found defective, the Contractor will repair or replace same within five (5) days of receipt of notice from the County Engineer. If the Contractor refuses or neglects to do such Work in the time specified, the County Engineer may have the Work done by others and the Contractor or his Surety thereof will pay the cost.

The Contractor will furnish the County a Maintenance Bond for a percentage of the final adjusted contract price, as stated above. The one (1) year period will start the day of Final Completion of Project by the County. Final payment is conditional on the receipt of a maintenance bond in a form acceptable to County Counsel.

18. TRAFFIC AND STREET MAINTENANCE

The Work must be started and performed by the Contractor in such a manner as to minimize delays to the traveling public. It must be completed in a timely fashion, with little or no inconvenience to traffic and pedestrians, where such inconvenience may be avoided.

All municipal, county, and state roadways shall remain open to traffic unless otherwise provided for in the technical specifications.

If modified traffic patterns are authorized in order to provide a safe working or traveling environment, the Contractor is responsible for providing all equipment, barrels, cones, signs, and barricades to implement the work zone and detours, unless otherwise specified in the technical specifications. All work zones and detours shall be established in accordance with the technical plans and specifications if provided or in strict compliance with the current version of the Manual for Uniform Traffic Control Devices (MUTCD). The Contractor shall obtain approval for these work zones and detour plans from the Municipal Police or applicable police agency and the Union County Bureau of Traffic Maintenance prior to implementation.

All traffic control plans shall provide for safe movement of vehicular, bicycle, and pedestrian traffic. Particular attention shall be given to requirements of the Americans with Disabilities Act.

No portion of any street or alleyway may be used for the storage of any materials or equipment without the approval of the Municipal Police or other applicable police agency. Sidewalks, gutters, drains, fire hydrants and private drives shall be maintained for their intended use unless specifically approved by the County Engineer.

Upon suspension of Work, at the end of the day or for protracted periods, the Contractor shall remove all rubbish and materials from the Work site to the approved storage/staging location. All road cuts, saw cuts, and trenches that may pose hazard to vehicular, pedestrian, or bicycle traffic, to include handicapped users, shall be filled to the surface of the roadway or sidewalk. At no time will steel plates or settled trenches be allowed at the daily suspension of Work, unless specifically approved by the County Engineer.

Use of Traffic Control Officers shall be determined by the County in accordance with the provisions of N.J.S.A. 40A:11-23.1(c). If applicable to the Project, the County shall have provided an allowance for same as set forth in the Bid Form.

With respect to pedestrian traffic, the Contractor shall install signs restricting access of the general public and, as necessary, Union County employees to the area of construction. The Contractor shall provide safe access to required areas and place physical barriers to restricted areas. These barriers may range from caution tape to actual barriers, at the direction of the County Engineer.

19. CONTRACTOR'S EMPLOYEES

The Contractor must employ only suitable and competent labor in the Work, and must remove from the Work any incompetent, unsuitable, or disorderly person upon complaint from the County Engineer.

The parties to any contract resulting from this proposal do hereby agree that the provisions of N.J.S.A. 10:2-1 through 10:2-4 (discrimination in employment on public works contracts): 34:11-56.25 et seq. (payment of prevailing rate of wages determined pursuant to N.J.S.A. 34:11-56.30 by the Commissioner), and the Rules and Regulations promulgated pursuant thereto, are hereby made a part of any contract and are binding upon them.

There will be no discrimination against any employee who is employed in the Work to be covered by any contract resulting from this bid because of age, race, creed, color, national origin, ancestry, marital status or sex.

Any person, firm, or corporation violating the provisions of this Section will be deemed and judged a disorderly person.

20. OWNERSHIP DISCLOSURES REQUIRED

Pursuant to P.L. 1977, N.J.S.A. 52:25-24.2, the Bidder shall submit with its Bid, or prior to receipt of bids, a statement setting forth the names and addresses of all stockholders in the corporation or partnership bidding who own ten percent (10%) or greater interest therein. (See forms attached)

21. NON-COLLUSION AFFIDAVIT

The Bidder shall submit with its bid either the attached completed "Non-Collusion Affidavit" or a statement of non-collusion with verbiage similar to same.

22. EQUAL EMPLOYMENT OPPORTUNITY COMPLIANCES

The successful bidder shall be required to complete and submit an Initial Project Workforce Report, New Jersey Department of Treasury Form AA-201, upon notification of award. Failure to submit this completed form may result in the Contract being terminated.

The successful bidder shall also be required to submit a copy of its Monthly Project Workforce Report, New Jersey Department of Treasury Form AA-202, to the New Jersey Department of Treasury's Division of Public Contracts Equal Employment Opportunity Compliance and to the Board.

23. COMPLIANCE WITH NEW JERSEY PREVAILING WAGE ACT

The County of Union, in order to fulfill the requirements of N.J.S.A. 34:11-56a.25 et seq, requires that the following additional conditions be strictly followed. The bidders represent that he is not listed or is not on record in the Office of the Commissioner or the Department of Labor and Industry as one who failed to pay prevailing wages in

accordance with the provisions of this Act. The bidder agrees to the inclusion of a contract provision upon award which specifically requires said Contractor to fully comply with each and all of the requirements of the aforesaid Act as it relates to prevailing rates of wages on public contracts as set forth in the New Jersey Prevailing Wage Act, P.L. 1963, Chapter 150 and P.L. 1974, Chapter 64.

A Copy of the Prevailing Wage Rates is attached for your reference. Applicable rates are those wages and fringe benefit rates in effect on the date the contract is awarded. All predetermined rate increases listed at the time the contract award must also be paid, beginning on the dates specified. Rates may change between the time of issuance of this determination and the award of the public works contract. Therefore, prior to the award of the contract, verification must be made with the Public Contracts section, to insure that the rates contained in this determination are still prevailing.

The Contractor agrees to abide and be bound by each and all of the said statutory provisions with respect to the payment of prevailing rates of wages, and acknowledges that the County reserves the right to terminate the Contractor's (or his subcontractors') right to proceed with the scope of Work, or such portion thereof that relates to the failure to pay prevailing rates of wages. In such event or under the terms of N.J.S.A. 34:11-56.27, the Contractor and his surety will be liable to the County of Union for any excess costs occasioned by such a violation.

The Contractor or subcontractors for this Project will post the Prevailing Wage Rates for each craft and classification involved as determined by the Commissioner of Labor and Industry, including the effective date of any changes thereof, in prominent and easily accessible places at the site of the Work or at such place or places as are used by them to pay workmen their wages.

The County of Union requires a copy of payroll records from the Contractor and subcontractors. Payroll records shall be submitted with each voucher request for payment. Prevailing wage rates may be obtained from the New Jersey Labor, Division of Workplace Standards, Public Contracts Section, (609-292-2259).

In addition to compliance with the New Jersey Prevailing Wage Act, the County requires compliance with procedures established by Resolution No. 2014-0408 adopted by the Union County Board of Chosen Freeholders on May 8, 2014. The resolution is furnished in Section 53 of these General Specifications.

UNION LABOR IS PREFERRED ON ALL COUNTY WORK

The foregoing reference to specific laws will not be deemed to be a limitation of obligation of the Contractor to perform his obligations in full compliance with the provisions and requirements of all federal and state statutes and local ordinances applicable to the Work to be done under the contract.

It is agreed and understood that any contracts and/or orders placed as a result of this proposal will be governed and construed and the rights and obligations of the parties hereto will be determined in accordance with the laws of the State of New Jersey.

Upon completion of the Work, the Contractor will furnish a Certification of Compliance with the New Jersey Prevailing Wage Act. The certificate in a form acceptable to County Counsel is a condition of the final payment. (See form attached)

24. BRAND NAME OR EQUAL

When the Specifications, Forms, and other Contract Documents use “brand name or equivalent” or similar language, the listed brand name shall serve as a reference or point of comparison for the functional or operational characteristic desired for the goods or services being requested. Where a bidder attempts to submit an equivalent product for a brand name, it shall be the responsibility of the bidder to fully describe and document the product to be provided with the bid in order to establish the equivalence claim.

- A. If the Bidder proposes to offer substitute goods as an equal to those specified herein, the bidder shall so indicate with the Bid Proposal. For the purposes of this paragraph, a proposed item shall be considered equal to goods specified herein if:
 - 1. The County, in its sole discretion, determines that: (i) the goods conform substantially, even with deviations, to the brand name goods specified herein; (ii) the goods are equal to or greater than the brand name goods specified herein in terms of quality, durability, functionality, appearance, strength and design; (iii) the goods are capable, at least as well as the brand name goods specified herein, or performing with existing equipment; and (iv) the goods do not cost the County more than the brand name goods specified herein costs the County.

- B. To offer substitute goods as an equal to those specified herein, it is necessary that:
 - 1. The Bidder submits sufficient information with its bid to permit the County to determine that the goods are equivalent to the brand name goods specified herein, including, but not necessarily limited to the brand, catalog number and specifications/data sheets;

2. The Bidder fully identifies and describes the variations of the goods from the brand name goods specified herein on a separate sheet that is to be submitted with the bid proposal. Bidder's literature WILL NOT suffice in explaining exceptions to these specifications.
 3. The Bidder certifies that the goods (i) are similar in substance to the brand name goods specified, and (ii) are suited to the same use as the item specified;
- C. The County shall be allowed a reasonable time within which to evaluate the Bidder's proposal to offer substitute goods as an equal to those specified herein. The County shall be the sole judge of acceptability. No "or-equal" goods shall be ordered, delivered, assembled, set-up or utilized until the County's evaluation is complete. The County's determination as to equivalency shall be deemed final and absolute.

In the event the Bidder does not provide sufficient supporting documentation with the bid, it will be presumed and required that the brand name goods and services as described in the specifications will be provided.

25. LINES AND GRADES

Normally, horizontal and vertical control points will be provided in the technical specifications. All other surveying will be the responsibility of the Contractor unless otherwise noted.

26. NUMBER OF WORKING DAYS

In accordance with NJSA 40A:11-17, the Work for the within Project shall be completed as specified on the Time of Completion Form. See form attached.

There shall be taken a deduction from the contract price, or any wages paid by the County, to any inspector(s) necessarily employed by it on the Work, for any number of days in excess of the number allowed in the specifications.

27. PROMPT PAYMENT OF CONSTRUCTION CONTRACTS (NJ Prompt Payment Act)

Pursuant to NJSA 2A:30A-1 et. seq., payment to the Contractor, other than for Work done pursuant to a contact allowance, where applicable, shall be processed and paid as follows:

1. All contractor bills shall be either approved for payment, or notice provided as to why the bill or any portion of it will not be approved by the representative(s) of the governing body no later than the public meeting following 20 calendar days of the billing date as defined in the statute.
2. If the billing is approved, said bill shall be paid in the payment cycle following the meeting.

28. STOPPING WORK ON ACCOUNT OF BAD WEATHER

Work must only be performed in weather suitable for the type of construction planned or underway. Extremes in temperature, humidity, precipitation, evaporation, etc. can detrimentally affect the constructed product. Refer to the Standard and Technical Specifications for specific items.

29. ACCESS FOR OTHER CONTRACTORS

The Contractor for this Work will give proper access to other contractors who may be employed upon the Project and must not hinder or delay unnecessarily any Work that may be progressing under other contracts.

30. CONDEMNED MATERIALS AND WORK

Any materials and or part of the Work that may be condemned by the County Engineer will be removed and replaced by the Contractor or otherwise rectified, as may be directed by the County Engineer. No payment will be made upon the Work until such faulty work has been made good as may be directed. In the event the Contractor refuses or neglects to make good such faulty work, he will be deemed to have abandoned the contract and proceedings may be taken against him as provided herein.

31. STORAGE

In the event that it is necessary for the Contractor to stockpile or store materials or equipment on the job site, the Contractor shall inform the County of such necessity and the County may offer available space, if any, for storage of such materials or equipment. The Contractor shall use said space only for such purpose. Any and all materials which may be stored in such space or which may be brought onto the job site at any time by the Contractor will be at the Contractor's sole risk. The County will not be responsible for loss of or damage to said materials or equipment for any cause whatsoever. The Contractor shall take necessary measures to protect any such storage area and shall be responsible for any and all damages.

32. FINAL CLEAN UP

Upon completion of the Work, the Contractor will remove all equipment, unused materials, rubbish, etc., and will repair, or replace in an a manner acceptable to the County Engineer, all areas that may have been damaged in the prosecution of the Work. Same shall be a condition precedent to final payment. Should said Contractor fail to comply with this requirement, the County shall undertake the clean-up with its own forces and charge the cost of same against the Contractor's contract balance.

33. SUB-LETTING OF WORK

Except for the List of Subcontractors, pursuant to NJSA 40A:11-16 (See form attached), no portion of the Work will be sublet by the Contractor to any other entities, except with the consent of the County Engineer. A complete list of subcontractors must be submitted to the County Engineer at the preconstruction meeting. If the job does not warrant a preconstruction meeting, the Contractor must submit such list prior to the start of Work.

All Subcontractors will be subject to NJSA 34:11-56 et al.

N.J.S.A. 40A:11-16 requires the bidder to list in the bid sheets the name or names of all subcontractors involved in the following types of Work: plumbing and gas fitting and all kindred work, steam and hot water heating, ventilating apparatus, steam power plants and kindred work, electrical work, ornamental iron work, and structural steel. In addition, the County may require the identification of specific additional subcontractors. If these trades are expected to be part of the contract, such subcontractors should be listed on the "Subcontractor Identification Statement List of Subcontractors" and Bidder shall certify same on the accompanying sheet titled "Subcontractor Identification Certification". (See forms attached) **Bidder's failure to submit these two forms shall be considered a material defect and result in rejection of Bidder's bid.** Substitutions of any listed subcontractors pursuant to NJSA 40A:11-16 will not be permitted except with the consent of the County Engineer.

34. SAFETY

The Contractor shall observe all rules and regulations of the Federal, State, and local health officials. Attention is directed to Federal, State, and local laws, rules, and regulations concerning construction safety and health standards. The Contractor shall not require any worker to work in surroundings or under conditions that are unsanitary, hazardous, or dangerous to the worker's health or safety.

The Contractor shall admit to the site, without delay and without the presentation of an inspection warrant, any inspector of OSHA or other legally responsible agency involved in safety and health administration upon presentation of proper credentials.

The Contractor shall make available to the Contractor's employees, subcontractors, the County Engineer, and the public, all information pursuant to OSHA 29 CFR Part 1926.59 of The Hazard Communication Standard 29 CFR 1910.1200, and shall also maintain a file on each job site containing all Material Safety Data Sheets (MSDS) for products in use at the Project. These Material Safety Data Sheets shall be made available to the Engineer upon request.

The Contractor shall at all times conduct the Work to provide for the safety and convenience of the general public and protection of persons and property. The safety provisions of applicable laws, OSHA regulations, building and construction codes, and the rules and regulations of the New Jersey Department of Labor and Commerce shall be observed.

35. QUALITY, SAFETY AND PERFORMANCE STANDARDS

All goods and services must be constructed and provided with the highest quality materials and workmanship. It is the intent of these specifications that only equipment equal to, or exceeding, the standard specified will be acceptable in order to protect the safety of the occupants of the Building.

36. MATTERS NOT MENTIONED IN CONTRACT DOCUMENTS

Any Work, material, or method, not specifically described in these specifications, but shown upon the plans of the Work, will be carried out as shown on said plan.

37. PERMITS

The Contractor will obtain all necessary permits required by law and provide the County with necessary approvals prior to commencement of permitted Work.

38. CONTRACTOR TO PROVIDE PROOF OF PAYMENT

Upon the completion of the Work, the Contractor will furnish a General Release as proof that all claims for labor, materials, etc., have been settled by the Contractor. The General Release, in a form acceptable to County Counsel, is a condition of final payment.

39. CHANGE ORDERS

Change Order Procedures shall comply with *N.J.A.C. 5:30-11.1 et seq.*, "Change Orders and Open End Contracts" and subsequent provisions of the New Jersey Administrative Code.

40. SUPPLEMENTAL WORK

In case any supplemental work is necessary, it will be performed by the Contractor at a price fixed by agreement between the Contractor and the County

Engineer and approved by the County as specified in Section 38. The Contractor will do no supplemental work on any character, for which the Contractor will demand pay, except upon the written order of the County.

41. FORM OF CONTRACT

Contracts will be let on the attached Form of Agreement Between County (“Owner”) and Contractor (AIA 101), and General Conditions (AIA 201), as supplemented.

The Contract will be subject to all statutory provisions on the matter of Public Works, Public Contracts, The Law Against Discrimination, the Laws Governing Affirmative Action and Prevailing Rates of Wages under the laws of New Jersey.

The Agreements shall be executed by both parties not later than twenty-one (21) days from the date of the award by the County (Sundays and holidays excluded); however, such time frame may be extended by agreement of the parties.

42. PROGRESS PAYMENTS

Monthly progress payments will be made based on the value of labor and materials incorporated in the Work and of materials suitably stored at the site. An itemized schedule of values shall be submitted with each Application for Payment.

(Refer to the Owner/Contractor Agreement for Retainage and other conditions pertaining to payment and the application of NJSA 2A:30A-1 et. seq.)

All Applications for Payment shall be accompanied by paid invoices for materials incorporated in the Work and for materials suitably stored at the site, and affidavit(s) by Subcontractors whose Work was included in the next to the last application to the effect such Work and such materials have been paid for.

No payment shall be made without Contractor having provided all submittals set forth in this Section, and the approval of same by the County.

For contracts exceeding \$100,000.00, monthly payments will be made on the Work to the extent of 98% of the value of the Work done which is considered to be retainage.

For contracts less than \$100,000.00, monthly payments will be on the Work to the extent of 90% of the value of the Work done. In lieu of the retainage, the Contractor will, at his option, deposit with the County Counsel negotiable bearer bonds of the State of New Jersey or any political subdivision thereof, equal to the amount otherwise withheld as retainage.

When the Project is completed, the final cost of the Project will be based on actual quantities of authorized Work done under each item scheduled in the bidding sheet and approved Change Orders, if any. The money due to the Contractor as determined by said final certificate after deduction of previous monthly payments on account, will be paid to the Contractor in accordance with the terms of the contract dealing with Prompt Payment, providing, however that before such final payment is made, all outstanding claims against the Contractor must be satisfied. Before final payment is released, the Contractor must furnish: **a)** Maintenance Bond (see Section 17 of these general specifications); **b)** Certification of Compliance, New Jersey Prevailing Wage Act (see Sections 23 & 53); and **c)** General Release (see Section 38) in a form satisfactory to County Counsel; **d)** complete set of as-built plans in the latest AutoCad on compact disc; and **e)** a complete set of in-progress photos in jpg, jpeg, or bmp digital format on a compact disc.

43. INSPECTION

The Work must be done in accordance with the plans and specifications, and will be inspected by the County Engineer. An inspector may be placed upon the Work at any time by the County Engineer to see that the plans, specifications, and instructions of the County Engineer are carried out. In connection herewith, bidders are referred to N.J.S.A. 40A:11-17.

44. DAMAGES

The Contractor will be held responsible for all damages that may occur to Work, or to persons or property by reason of the nature of the Work or from the elements, or by reason of inadequate protection of the Work, or from any carelessness or negligence on his part or on the part of his employees. The County will withhold payments on the Work until all suits or claims for damages sustained on, or by reason of, this Work will have been settled by the Contractor.

The construction and final completion of this Work will be guaranteed by the Contractor. Any damages that may be done to the Work or any part thereof, by the elements or otherwise, during its construction, will be made good by the Contractor.

45. LIQUIDATED DAMAGES

If the Project is not completed within the time specified herein or within such further time as may have been granted by the County Engineer, then the Contractor hereby agrees to pay to the County as liquidated damages, but not as a penalty, \$1,000.00 per day for each and every calendar day that he is in default on time to complete the Work. The said sum will be deducted from moneys due the Contractor and if the damages exceed this amount, then the Contractor or his Surety Company will pay the excess. These damages may be waived at the option of the County.

46. AFFIRMATIVE ACTION REQUIREMENTS

EXHIBIT B (Revised 4/10)

MANDATORY EQUAL EMPLOYMENT OPPORTUNITY LANGUAGE N.J.S.A. 10:5-31 et seq. (P.L. 1975, C. 127) N.J.A.C. 17:27

CONSTRUCTION CONTRACTS

During the performance of this contract, the contractor agrees as follows:

The contractor or subcontractor, where applicable, will not discriminate against any employee or applicant for employment because of age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex. Except with respect to affectional or sexual orientation and gender identity or expression, the contractor will ensure that equal employment opportunity is afforded to such applicants in recruitment and employment, and that employees are treated during employment, without regard to their age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex. Such equal employment opportunity shall include, but not be limited to the following: employment, up-grading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Public Agency Compliance Officer setting forth provisions of this nondiscrimination clause.

The contractor or subcontractor, where applicable will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex.

The contractor or subcontractor will send to each labor union, with which it has a collective bargaining agreement, a notice, to be provided by the agency contracting officer, advising the labor union or workers' representative of the contractor's commitments under this act and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

The contractor or subcontractor, where applicable, agrees to comply with any regulations promulgated by the Treasurer, pursuant to N.J.S.A. 10:5-31 et seq., as amended and supplemented from time to time and the Americans with Disabilities Act.

When hiring or scheduling workers in each construction trade, the contractor or subcontractor agrees to make good faith efforts to employ minority and women workers in each construction trade consistent with the targeted employment goal prescribed by N.J.A.C. 17:27-7.2; provided, however, that the Division may, in its discretion, exempt a contractor or subcontractor from

compliance with the good faith procedures prescribed by the following provisions, A, B and C, as long as the Division is satisfied that the contractor or subcontractor is employing workers provided by a union which provides evidence, in accordance with standards prescribed by the Division, that its percentage of active "card carrying" members who are minority and women workers is equal to or greater than the targeted employment goal established in accordance with N.J.A.C. 17:27-7.2. The contractor or subcontractor agrees that a good faith effort shall include compliance with the following procedures:

(A) If the contractor or subcontractor has a referral agreement or arrangement with a union for a construction trade, the contractor or subcontractor shall, within three business days of the contract award, seek assurances from the union that it will cooperate with the contractor or subcontractor as it fulfills its affirmative action obligations under this contract and in accordance with the rules promulgated by the Treasurer pursuant to N.J.S.A. 10:5-31 et. seq., as supplemented and amended from time to time and the Americans with Disabilities Act. If the contractor or subcontractor is unable to obtain said assurances from the construction trade union at least five business days prior to the commencement of construction work, the contractor or subcontractor agrees to afford equal employment opportunities minority and women workers directly, consistent with this chapter. If the contractor's or subcontractor's prior experience with a construction trade union, regardless of whether the union has provided said assurances, indicates a significant possibility that the trade union will not refer sufficient minority and women workers consistent with affording equal employment opportunities as specified in this chapter, the contractor or subcontractor agrees to be prepared to provide such opportunities to minority and women workers directly, consistent with this chapter, by complying with the hiring or scheduling procedures prescribed under (B) below; and the contractor or subcontractor further agrees to take said action immediately if it determines that the union is not referring minority and women workers consistent with the equal employment opportunity goals set forth in this chapter.

(B) If good faith efforts to meet targeted employment goals have not or cannot be met for each construction trade by adhering to the procedures of (A) above, or if the contractor does not have a referral agreement or arrangement with a union for a construction trade, the contractor or subcontractor agrees to take the following actions:

(1) To notify the public agency compliance officer, the Division, and minority and women referral organizations listed by the Division pursuant to N.J.A.C. 17:27-5.3, of its workforce needs, and request referral of minority and women workers;

(2) To notify any minority and women workers who have been listed with it as awaiting available vacancies;

(3) Prior to commencement of work, to request that the local construction trade union refer minority and women workers to fill job openings, provided the contractor or subcontractor has a referral agreement or arrangement with a union for the construction trade;

(4) To leave standing requests for additional referral to minority and women workers with the local construction trade union, provided the contractor or subcontractor has a referral agreement or arrangement with a union for the construction trade, the State Training and Employment Service and other approved referral sources in the area;

(5) If it is necessary to lay off some of the workers in a given trade on the construction site, layoffs shall be conducted in compliance with the equal employment opportunity and non-discrimination standards set forth in this regulation, as well as with applicable Federal and State court decisions;

(6) To adhere to the following procedure when minority and women workers apply or are referred to the contractor or subcontractor:

(i) The contractor or subcontractor shall interview the referred minority or women worker.

(ii) If said individuals have never previously received any document or certification signifying a level of qualification lower than that required in order to perform the work of the construction trade, the contractor or subcontractor shall in good faith determine the qualifications of such individuals. The contractor or subcontractor shall hire or schedule those individuals who satisfy appropriate qualification standards in conformity with the equal employment opportunity and non-discrimination principles set forth in this chapter. However, a contractor or subcontractor shall determine that the individual at least possesses the requisite skills, and experience recognized by a union, apprentice program or a referral agency, provided the referral agency is acceptable to the Division. If necessary, the contractor or subcontractor shall hire or schedule minority and women workers who qualify as trainees pursuant to these rules. All of the requirements, however, are limited by the provisions of (C) below.

(iii) The name of any interested women or minority individual shall be maintained on a waiting list, and shall be considered for employment as described in (i) above, whenever vacancies occur. At the request of the Division, the contractor or subcontractor shall provide evidence of its good faith efforts to employ women and minorities from the list to fill vacancies.

(iv) If, for any reason, said contractor or subcontractor determines that a minority individual or a woman is not qualified or if the individual qualifies as an advanced trainee or apprentice, the contractor or subcontractor shall inform the individual in writing of the reasons for the determination, maintain a copy of the determination in its files, and send a copy to the public agency compliance officer and to the Division.

(7) To keep a complete and accurate record of all requests made for the referral of workers in any trade covered by the contract, on forms made available by the Division and submitted promptly to the Division upon request.

(C) The contractor or subcontractor agrees that nothing contained in (B) above shall preclude the contractor or subcontractor from complying with the union hiring hall or apprenticeship policies in any applicable collective bargaining agreement or union hiring hall arrangement, and, where required by custom or agreement, it shall send journeymen and trainees to the union for referral, or to the apprenticeship program for admission, pursuant to such agreement or arrangement. However, where the practices of a union or apprenticeship program will result in the exclusion of minorities and women or the failure to refer minorities and women consistent with the targeted county employment goal, the contractor or subcontractor shall consider for employment persons referred pursuant to (B) above without regard to such agreement or arrangement; provided further, however, that the contractor or subcontractor shall not be required to employ women and minority advanced trainees and trainees in numbers which result in the employment of advanced trainees and trainees as a percentage of the total

workforce for the construction trade, which percentage significantly exceeds the apprentice to journey worker ratio specified in the applicable collective bargaining agreement, or in the absence of a collective bargaining agreement, exceeds the ratio established by practice in the area for said construction trade. Also, the contractor or subcontractor agrees that, in implementing the procedures of (B) above, it shall, where applicable, employ minority and women workers residing within the geographical jurisdiction of the union.

After notification of award, but prior to signing a construction contract, the contractor shall submit to the public agency compliance officer and the Division an initial project workforce report (Form AA 201) electronically provided to the public agency by the Division, through its website, for distribution to and completion by the contractor, in accordance with N.J.A.C. 17:27-7. The contractor also agrees to submit a copy of the Monthly Project Workforce Report once a month thereafter for the duration of this contract to the Division and to the public agency compliance officer.

The contractor agrees to cooperate with the public agency in the payment of budgeted funds, as is necessary, for on-the-job and/or off-the-job programs for outreach and training of minorities and women.

(D) The contractor and its subcontractors shall furnish such reports or other documents to the Division of Public Contracts Equal Employment Opportunity Compliance as may be requested by the Division from time to time in order to carry out the purposes of these regulations, and public agencies shall furnish such information as may be requested by the Division of Public Contracts Equal Employment Opportunity Compliance for conducting a compliance investigation pursuant to **Subchapter 10 of the Administrative Code (NJAC 17:27)**.

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47. INVESTMENT ACTIVITIES WITH IRAN

Pursuant to P.L. 2012, c.25, codified as NJSA 52:32-55 *et seq.*, prohibits State and local public contracts with persons or entities engaging in certain investment activities in energy or finance sectors of Iran.

48. COMPLIANCE WITH THE PUBLIC WORKS CONTRACTOR REGISTRATION ACT - (NJSA 34:11-56.48 *et. seq.*)

Pursuant to the above-referenced law, Bidders are required to be registered with the New Jersey Department of Labor and to possess a current certificate by said Department indicating compliance with the Act prior to the time and date that bids are received. Bidders are notified of this requirement of their compliance. Such certificates or applications shall also be provided for each Subcontractor furnishing plumbing and gas fitting, steam and hot water heating and ventilating apparatus, and all kindred work, steam power plants and kindred work, electrical work, structural steel and ornamental iron work, and such other subcontractors as the specifications require relative to prior identification.

49. UTILITIES

Attention of the bidder is directed to the fact that the approximate locations of known utility structures and facilities that may be encountered within and adjacent to the limits of the Work are shown on the plans and described herein. The accuracy and completeness of this information is not guaranteed by the County Engineer and the bidder is advised to ascertain for himself all the facts concerning the location of these and other utilities.

The Contractor will not proceed with his Work until he has made diligent inquiries of all public utility and municipal officials to determine the exact location of all underground structures and pipes within the site of the Project. The Contractor will notify utility owners not less than ten (10) days in advance of the time he proposes to perform any Work that will endanger or affect their facilities in compliance with **New Jersey One-Call**. In excavating in any part of the Work, care must be taken not to remove or damage any gas, water, sewer, or other pipe, conduit, or structure, - public or private - without the concurrence of the owner and the County Engineer. The Contractor will, at his own expense, shore up, secure and maintain a continuous flow in such structures, and will keep them in repair until final acceptance of the Work.

When pipes or other structures are encountered or when the removal, relocation or protection of these utilities are necessary in carrying out the Project as planned, the Contractor will cooperate with the owner of said utilities and will permit the owners or their agents access to the site of the Work in order to relocate or protect their facilities and not hinder or delay unnecessarily the Work of the owners in moving same. No extra allowance of payment will be made to the Contractor for the use of any materials,

equipment, etc., or for the performance of any Work in connection with the moving of said structures unless the Contractor is specifically ordered by the County Engineer to furnish such materials, equipment, or services. If directed by the County Engineer to do any Work or furnish any materials or equipment, payment will be allowed the Contractor in accordance with the unit prices bid for such Work, or, if such items are not scheduled in the proposal, such Work shall be allowed "Supplemental Work" as provided in Section 39 of these general specifications. The corporations, companies, agencies or municipalities owning or controlling the utilities, and the name, and telephone numbers are listed in the beginning of the Technical Specifications.

50. MATERIAL COMPLIANCE AND SHOP DRAWINGS

The Contractor will require the manufacturer or supplier to furnish three (3) copies of Certification of Compliance with each delivery of materials, components and manufactured items for the Project. Two (2) copies will be furnished to the County Engineer; one copy will be retained by the Contractor. Certificates of Compliance will contain the following information:

1. Project to which material is consigned;
2. Name of the Contractor to which the material is supplied;
3. Kind of material supplied;
4. Quantity of material represented by the Certificate;
5. Means of identifying the consignment, such as label marking, seal number, etc.;
6. Date and method of shipment;
7. That the material is in conformity with the pertinent specifications stated in the certificate; and
8. Signature of a person having legal authority to bind the supplier.

The Contractor will submit to the County Engineer for his approval five (5) copies of complete and fully detailed shop or working drawings for those items listed in the beginning of the technical specifications.

Each drawing will identify the name of the job, location and Contractor.

All drawings will be approved in accordance with the standard specifications. Refer to the Technical Specifications for specific items.

All materials or articles used in the Work will be of American manufacture, insofar as same are available, in conformance with N.J.S.A. 40A:11-18.

51. PRECONSTRUCTION

In order to provide full coordination of this Project among the parties concerned, the County Engineer will arrange for a preconstruction meeting between the Contractor,

County Engineer and other interested parties as soon as possible after the contract is executed. At this meeting the Contractor will present his proposed schedule of Work which shall be subject to review and approval of the County through its designated representatives.

52. DISPUTES UNDER THE CONTRACT

A dispute arising under the Contract shall be submitted in writing to the County Engineer with all facts and supporting data. The County Engineer will review the dispute and issue his decision or request additional facts or documentation after which he will render his decision.

In the event the dispute is not then resolved, the matter shall, pursuant to law, be submitted to mediation before being submitted to a court of competent jurisdiction venued in Union County.

The County Engineer will notify the County Counsel when a matter is to be submitted to mediation. The County Counsel will communicate with the parties and inform them of the procedures to be followed in making such a submission.

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**53. ORDINANCE NO. 557-2002 ADOPTED ON SEPTEMBER 5, 2002
BY THE BOARD OF CHOSEN FREEHOLDERS**

Ordinance No. 557-2002 adopted on September 5, 2002 by the Board of Chosen Freeholders on Preclassification of Bidders by the NJDPMC (**if applicable**) pursuant to Ordinance No. 557-2002, the County of Union requires all bidders on projects for the construction, reconstruction, demolition, alteration, repair or maintenance of public buildings to be preclassified by the State of New Jersey, Department of Treasury, Division of Property Management and Construction ("DPMC").

Bidders must provide proof of classification in the form of a Certificate/Notice of Classification from the DPMC showing a sufficient aggregate rating to cover their bid amount, which is active on the date of receipt of these bids. Further, Bidder must also provide proof of preclassification in the applicable/appropriate trade code necessary for Work on the Project.

AN ORDINANCE IN ACCORDANCE WITH N.J.S.A. 40A:11-25 ESTABLISHING REASONABLE REGULATIONS APPROPRIATE FOR CONTROLLING THE QUALIFICATIONS OF PROSPECTIVE BIDDERS UPON CONTRACTS TO BE AWARDED ON BEHALF OF THE CONTRACTING UNIT, BY THE CLASS OR CATEGORY OF GOODS AND SERVICES TO BE PROVIDED OR PERFORMED AND FIXING THE QUALIFICATIONS REQUIRED ACCORDING TO THE FINANCIAL ABILITY AND EXPERIENCE OF THE BIDDERS AND THE CAPITAL AND EQUIPMENT AVAILABLE TO THEM PERTINENT TO AND REASONABLY RELATED TO THE CLASS AND CATEGORY OF SERVICE TO BE PERFORMED IN THE PERFORMANCE OF ANY SUCH CONTRACT.

WHEREAS, N.J.S.A. 40A:11-25 provides that the governing body of any contracting unit may establish reasonable regulations appropriate for controlling the qualifications of prospective bidders upon contracts to be awarded on behalf of the contracting unit, by the class or category of goods and services to be provided or performed; and

WHEREAS, N.J.S.A. 40A:11-25 also states that the regulations established by the governing body may fix the qualifications required according to the financial ability and experience of the bidders and the capital and equipment available to them pertinent to and reasonably related to the class and category of service to be performed in the performance of any such contract; and

WHEREAS, N.J.S.A. 40A:11-25 also requires that prior to the adoption of any such regulations, a contracting unit shall submit them to a public hearing and notice and a general description of the subject matter shall be published in not less than two newspapers; and

WHEREAS, N.J.S.A. 52:35-1 et seq. and 18A:18A-27 et seq. establish qualifications for the experience and financial abilities of bidders and the capital and equipment available to them relative to the specific services to be performed; and

WHEREAS, currently state officials, under the Department of Treasury, Division of Property Management and Construction, classify all prospective bidders as to the character and amount of public works on which they shall be qualified to submit bids and bids shall be accepted only from persons qualified in accordance with such classifications; and

WHEREAS, application for classification is open to all Contractors, regardless of the size of the business; and

WHEREAS, classification is based on general standards equally applicable to all Contractors; and

WHEREAS, classification is expressed in terms of trade and an aggregate rating determined on the basis of experience, financial ability, equipment and capital; and

WHEREAS, generally aggregate ratings can range from 0 to \$200,000.00; and

WHEREAS, the County of Union will determine the aggregate rating it will require on contracts depending on the size and expense of the Project, but at no time shall the required aggregate rating exceed \$25,000,000.00 for any one project; and

WHEREAS, such provisions are of considerable benefit to the County and to bidders by insuring that such bidders have the requisite experience, expertise and resources necessary to effectively perform the terms and conditions of the contract:

BE IT ORDAINED by the Board of Chosen Freeholders of the County of Union that it formally adopts as **Policy** that all prospective bidders for building construction projects be classified in accordance with the Department of Treasury – Division of Property Management and Construction pursuant to N.J.S.A. 52:35-1 et seq. and N.J.S.A. 18A:18A-27 et seq.

BE IT FURTHER ORDAINED that the Board of Chosen Freeholders of the County of Union hereby adopts the classification of bidders by the New Jersey Department of Treasury, Division of Property Management and Construction as a reasonable regulation for controlling the qualifications of prospective bidders upon contracts to be awarded for construction on behalf of the County of Union.

BE IT FURTHER ORDAINED that the provisions of this ordinance are severable. To the extent any clause, phrase, sentence, paragraph or provision of this ordinance shall be declared invalid, illegal or unconstitutional, the remaining provisions shall continue to be in full force and effect.

BE IT FURTHER ORDAINED that a public hearing shall be held on this ordinance on September 5, 2002 at the meeting of the Board of Freeholders, County Administration Building, Elizabeth, New Jersey.

BE IT FURTHER ORDAINED that the Clerk of the Board of Freeholders of the County is hereby directed to publish and post notice of this ordinance as required by law.

BE IT FURTHER ORDAINED that within 10 days hereof the Clerk of the Board of Freeholders of the County shall forward certified copies of this ordinance to the County Manager, Director of Finance, County Counsel, and Division of Local Government Services.

This ordinance shall take effect twenty (20) days after final adoption and publication in accordance with applicable law.

54. CONTRACTOR BUSINESS REGISTRATION CERTIFICATE New Mandatory Requirement -Effective 1/18/2010

The recently enacted **P.L. 2009, c.315**, requires that effective January 18, 2010; a contracting agency must receive proof of the bidder's business registration prior to the award of a contract. However, the proof must show that the bidder was in fact registered with the State of New Jersey Department of the Treasury, Division of Revenue and obtained the business registration prior to the receipt of bids.

If subcontractors are named on the bid, proof of the business registration for each subcontractor must be provided prior to the award of bid. Similarly to the bidder, the proof must show that each subcontractor was registered with the State of New Jersey Department of the Treasury, Division of Revenue and obtained the business registration prior to the receipt of bids.

Proof of business registration shall be

- A copy of a Business Registration Certificate issued by the Department of the Treasury, Division of Revenue; or
- A copy of the web version provided by the NJ Division of Revenue, or

Register online at <http://www.state.nj.us/treasury/revenue/busregcert.htm>. Click the "online" link and then select "Register for Tax and Employer Purposes or call the Division at 609-292-1730.

Note: A NJ Certificate of Authority is not acceptable.

FAILURE to submit proof of registration of the bidder or any subcontractor named on the bid prior to the award of contract shall be cause to reject the bid.

FAILURE of the bidder or any subcontractor named on the bid to be registered prior to the receipt of bids is cause for a **MANDATORY REJECTION** of bids. (A NON-WAIVABLE DEFECT). This covers construction Work as well as non-construction bids.

IN ADDITION:

N.J.S.A. 52:32-44 imposes the following requirements on Contractors and all subcontractors that knowingly provide goods or perform services for a Contractor fulfilling this contract:

- 1) the Contractor shall provide written notice to its subcontractors and suppliers to submit proof of business registration to the Contractor;
- 2) subcontractors through all tiers of a project must provide written notice to their subcontractors and suppliers to submit proof of business registration and subcontractors shall collect such proofs of business registration and maintain them on file;

- 3) prior to receipt of final payment from a contracting agency, the Contractor must submit to the contacting agency an accurate list of all subcontractors and suppliers or attest that none was used; and,
- 4) during the term of this contract, the Contractor and its affiliates shall collect and remit, and shall notify all subcontractors and their affiliates that they must collect and remit, to the Director, New Jersey Division of Taxation, the use tax due pursuant to the Sales and Use Tax Act, (*N.J.S.A. 54:32B-1 et seq.*) on all sales of tangible personal property delivered into this State.

A Contractor, subcontractor or supplier who fails to provide proof of business registration or provides false business registration information shall be liable to a penalty of \$25 for each day of violation, not to exceed \$50,000 for each business registration copy not properly provided or maintained under a contract with a contracting agency. Information on the law and its requirements are available by calling (609) 292-9292.

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55. BID PROTEST – LEGAL FEES AND COSTS

In the event a Bidder unsuccessfully challenges a Bid Submission by filing an action in a court of law concerning same, said Bidder shall be responsible for payment of reasonable legal costs and fees incurred by the County relating to said protest.

56. AMERICAN GOODS AND PRODUCTS WHERE POSSIBLE

Bidder shall comply with the requirements of NJSA 40A:11-18 and use only manufactured and farm products of the United States, wherever available, for the Project.

57. NEW JERSEY PAY-TO-PLAY REQUIREMENTS

This Contract is required by law to be publicly advertised for bids. As such, lists of political contributions pursuant to NJSA 19A:44A-1 et. seq. are NOT REQUIRED to be provided with the bids.

58. STATEMENT OF EQUIPMENT TO BE USED IN CONSTRUCTION

Pursuant to NJSA 40A:11-20 entitled Certificate of Bidder Showing Ability to Perform Contract, the County requires a Certification from all bidders submitting a bid showing that the Bidder owns, leases, or controls all necessary equipment required by the Project Plans and Specifications. All bidders shall provide this information at the time of the bid opening using the attached form entitled, "CERTIFICATE OF BIDDER SHOWING ABILITY TO PERFORM CONTRACT".

If the Bidder is not the actual owner of the equipment, it shall state the source from which the equipment will be obtained and shall attach a certificate from the owner or person in control of the equipment demonstrating that the equipment owner has granted the Bidder control of the requisite equipment during such time as may be necessary for completion of the portion of the contract for which the equipment is necessary.

59. NEW JERSEY SALES AND USE TAX REQUIREMENTS,

Contractors are required to comply with the following:

New Jersey Sales and Use Tax Requirements: All contractors with subcontractors, or any of their affiliates, who enter into contracts for the provision of goods or services with or for New Jersey local government entities, are required to collect and remit to the New Jersey Director of Taxation in the Department of the Treasury the use tax due on all of their sales of tangible personal property delivered into the State of New Jersey pursuant to the "Sales and Use Tax Act," (NJSA 54:32B-1 et, seq.), regardless of whether the tangible personal property is intended for a

contract with the contracting agency. This tax shall be remitted for the term of the Contract.

For purposes herein “affiliate” shall mean any entity that: (a) directly, indirectly, or constructively controls another entity, (b) is directly, indirectly, or constructively controlled by another entity, or (c) is subject to the control of a common entity. For purposes of the immediately preceding sentence, an entity controls another entity if it owns, directly or indirectly, more than fifty percent (50%) of the ownership interest in that entity. NJSA 52:32-44(g)(3).

ALFRED J. FAELLA
COUNTY MANAGER

LAURA M. SCUTARI, QPA, MPA
DIRECTOR / DIVISION OF PURCHASING

BID DOCUMENT SUBMISSION CHECKLIST

ALL SIGNATURES AND SEALS SHALL BE ORIGINALS UNLESS OTHERWISE SPECIFIED
BID SHEETS SHOULD NOT BE SUBMITTED DOUBLE SIDED PAGES, (SINGLE SIDE ONLY)

EACH BIDDER SHOULD COMPLETE THIS FORM AND INITIAL EACH ENTRY.

DATE COMPLETED: _____

PLEASE SUBMIT BID DOCUMENTS ON SINGLE SIDED PAPER ONLY, WITH THE EXCEPTION OF THE SURETY AND BID BOND DOCUMENTS.

IN ACCORDANCE WITH THE BID SPECIFICATIONS I HAVE REVIEWED, COMPLETED/EXECUTED AND INCLUDED THE FOLLOWING FORMS:

_____ Bid Form Page (**Signed, Dated and Bid on all alternatives applicable to the Work**).

_____ Security in the form of:

_____ Bid bond in an amount equal to 10% of the total amount of this bid not to exceed \$20,000.00; or

_____ Certified check or cashier's check in the amount of 10% of this bid not to exceed \$20,000.00

_____ Consent of Surety form signed by a Surety Company if the total amount of your Bid is over \$36,000.00. If your bid is accepted, the Surety Company that provided the Consent shall be required to furnish a Performance, Labor and Materials Bond in the amount of 100% of the award of the contract.

The County of Union has provided its Consent of Surety form for your use. The use of this form by your Surety Company will expedite the bid review process and eliminate the possibility of having your bid rejected. If, however, you should need to use another form, please use language similar to that used on the Union County form and avoid making any additions or deletions to the Union County form language. In lieu of the Consent of Surety you may submit a Certified Check in the full amount of the bid.

_____ STATEMENT OF BIDDER OWNERSHIP. Pursuant to N.J.S.A. 52:25-24.2, which includes **BOTH** of the following documents:

- Bidder Signature Page
- Bidder Disclosure Statement (**Fill out 2 pages completely**)

_____ SUBCONTRACTOR IDENTIFICATION. Pursuant to N.J.S.A. 40A:11-16, which includes **BOTH** of the following documents:

- Subcontractor Identification Statement: List of Subcontractors (**only for certain types of work**)
- Subcontractor Identification Certification

_____ Acknowledgement of Addendum form: (**This form is to be used only when an addendum has been added to the specifications**).

_____ A copy of the State of New Jersey Department of the Treasury, Division of Revenue, **Business Registration Certificate ("BRC")** should be included with the bids as it must be received by the County prior to the award of the contract. The BRC provided must show that the Bidder was registered at the time of receipt of bids or the bid will be rejected.

_____ A copy of the State of New Jersey Department of the Treasury, Division of Revenue, **Business Registration Certificate (“BRC”)** of all named or listed subcontractors (List of Subcontractors) in a Construction bid should be included with the bid as the BRC(s) must be received by the County prior to the award of the contract. Each subcontractor’s certificate provided must show that the subcontractor was registered at the time of the receipt of bids or the bid will be rejected.

_____ Affirmative Action Requirement

_____ Experience Statement

_____ Certificate of Bidder showing ability to perform Contract

_____ Non-Collusion Affidavit – Fill out completely and notarize

_____ Certificates from New Jersey Department of Labor – Public Works Contractor Registration Act. **(Only for certain types of work)**

_____ Federal Attachments **(If applicable)**

_____ NJDPMC Certificate / Notice of Classification **(If applicable)**

_____ Americans with Disabilities Act

_____ Statement of Bidder’s Qualifications

_____ Contractor Performance Record

_____ Affidavit Regarding List of Debarred, Suspended or Disqualified Bidders

_____ Prior Negative Experience Questionnaire

_____ Contractor’s Certification of Compliance – New Jersey Prevailing Wage Act

_____ Uncompleted Contracts Affidavit **(For Bidder, if applicable) MUST ALSO PROVIDE DPMC FORM 701**

_____ Certificate of Insurance Statement

_____ Collection of Use Tax on Sales to Local Government Statement

_____ Time of Completion

_____ Disclosure of Investment Activities in Iran form

I HAVE TAKEN THE FOLLOWING ACTIONS:

_____ Visited the site and attended the Pre-Bid Meeting **(Where applicable)**

_____ Reviewed the Contract Documents (including any permits the County or its professionals may have obtained), Work, Site, Locality, and Local Conditions and Laws and Regulations that in any manner may affect Cost, Progress, Performance or Furnishing of Work.

_____ Reviewed Bond Requirements

_____ Provided Proof of Compliance with New Jersey Prevailing Wage Act

_____ Reviewed Form of Owner/Contractor Agreement and General Conditions to the Contract

NOTE: QUESTIONS PERTAINING TO THIS BID ARE TO BE DIRECTED TO DIVISION OF ENGINEERING AT 908-789-3675

BIDDING DOCUMENTS

The Bidding Documents consist of the following items:

- **ADDENDA, if issued**
- **CLARIFICATIONS, if issued**
- **INSTRUCTION TO BIDDERS**
- **BID FORM**
- **OWNER-CONTRACTOR AGREEMENT (AIA 101) AND GENERAL CONDITIONS (AIA 201)**
- **SPECIFICATIONS:** As outlined in the Table of Contents and included in the Project Manual.
- **DRAWINGS:** As per List of Drawings, indicated on the Project Title Sheet.

Bidder's Name _____

BID FORM

I/We have carefully examined the plans, specifications, and advertisement for bid for the

**WHEELER PARK POOL HOUSE
DEMOLITION AND NEW CONSTRUCTION
CITY OF LINDEN, COUNTY OF UNION, NEW JERSEY
BA #63-2017; Union County Engineering Project #2014-029**

that is on file in the Union County Division of Engineering. I/We have inspected the site of the work and will contract to do all the work and furnish all materials mentioned in said plans and specifications. Work will be accomplished in the manner prescribed therein.

LUMP SUM BID:

Written

Figures

BID CONTINGENCY: (To be used if and when directed by the County)

SEVENTY-FIVE THOUSAND DOLLARS AND NO CENTS
Written

\$75,000.00
Figures

TOTAL LUMP SUM PLUS BID CONTINGENCY AMOUNT:

Written

Figures

NOTE: Bid Contingency may include one-half of one percent of contract amount set aside for local training if and when directed by the County.

Bidder's Name _____

ALTERNATES:

Alternates may be added to the Total Base Bid Amount. The bid will be awarded and / or Alternate will be selected as follows:

1. Award Lump Sum Only
2. Award Lump Sum + Alternate 1

Contractor must propose on the alternate listed below and as further described in Section 01 23 00 – Alternates.

ALTERNATE NO. 1: Provide & Install: Items shown on drawings.

ADD: \$ _____
Written

\$ _____
Figures

Bidder's Name _____

CONSENT OF SURETY
TO ACCOMPANY PROPOSAL (BID)

_____ (hereinafter called Surety), organized and existing under the laws of the State of _____ duly authorized and qualified to transact business in the State of New Jersey, in consideration of the sum of One Dollar (\$1.00), lawful money of the United States of America, to it in hand paid, receipt whereof is hereby acknowledged, and in consideration, hereby certifies and agrees that if the contract for which the attached proposal is made be awarded to _____ (hereinafter called Contractor) for the performance of certain work and labor or the supplying of certain materials, or both, as more particularly set forth in said proposal and described for purposes of this instrument as a proposal for _____ to the COUNTY OF UNION and if Contractor shall enter into the contract, Surety will become bound as surety for its faithful performance, labor and material payment and will provide the Contractor with a performance, labor and material payment bond in the full amount of the contract price.

NOTE:
Expiration date
Needed if Annual
Surety

NAME OF INSURANCE COMPANY

ADDRESS: _____

ORIGINAL SIGNATURE
ATTORNEY-IN-FACT FOR INSURANCE CO.

NOTE: PROOF OF AUTHORITY OF OFFICERS OF SURETY COMPANY TO EXECUTE THIS DOCUMENT MUST BE SUBMITTED.

BIDDER SIGNATURE PAGE

THE BIDDER MUST READ THE FOLLOWING INSTRUCTIONS TO COMPLETE THIS PAGE:

1. If doing business under a **trade name, partnership or a sole proprietorship**, you must submit the bid under exact title of the trade name, partnership, or proprietorship, and the bid must be signed by either the **owner**, or a **partner** and **witnessed** by a **notary public**.
2. If a **Corporation**, the bid must be signed by the **President** or **Vice President** and **witnessed** by a **Corporate Secretary** (corporate title must be exact) and **affix corporate seal**. If a Corporate Secretary does not exist, President or Vice President's signature shall be witnessed by a Notary Public.
3. Other persons **authorized** by **corporate resolution** to execute agreements in its behalf may also sign the bid documents (pages). **Copy of a resolution must accompany the bid**.
4. The person who signs this bid form **must also** sign the **Non-Collusion Affidavit**.
5. You **cannot** witness your own signature.

NAME OF BIDDER

ADDRESS OF BIDDER

**ORIGINAL SIGNATURE
CORPORATE SECRETARY**

**PRINT NAME AND TITLE
CORPORATE SECRETARY**

TEL: _____
FAX: _____
E-Mail: _____

BY: _____
ORIGINAL SIGNATURE

Corporate Seal

PRINT OR TYPE NAME AND TITLE

WARNING: IF YOU FAIL TO FULLY, ACCURATELY, AND COMPLETELY SUPPLY THE INFORMATION REQUESTED ON THIS PAGE, YOUR BID MAY BE REJECTED.

Bidder's Name _____

STATEMENT OF OWNERSHIP DISCLOSURE

N.J.S.A. 52:25-24.2 (P.L. 1977, c.33, as amended by P.L. 2016, c.43)

This statement shall be completed, certified to, and included with all bid and proposal submissions. Failure to submit the required information is cause for automatic rejection of the bid or proposal.

Name of Organization: _____

Organization Address: _____

Part I Check the box that represents the type of business organization:

- Sole Proprietorship (skip Parts II and III, execute certification in Part IV)
- Non-Profit Corporation (skip Parts II and III, execute certification in Part IV)
- For-Profit Corporation (any type) Limited Liability Company (LLC)
- Partnership Limited Partnership Limited Liability Partnership (LLP)
- Other (be specific): _____

Part II

- The list below contains the names and addresses of all stockholders in the corporation who own 10 percent or more of its stock, of any class, or of all individual partners in the partnership who own a 10 percent or greater interest therein, or of all members in the limited liability company who own a 10 percent or greater interest therein, as the case may be. **(COMPLETE THE LIST BELOW IN THIS SECTION)**

OR

- No one stockholder in the corporation owns 10 percent or more of its stock, of any class, or no individual partner in the partnership owns a 10 percent or greater interest therein, or no member in the limited liability company owns a 10 percent or greater interest therein, as the case may be. **(SKIP TO PART IV)**

STATEMENT OF OWNERSHIP DISCLOSURE - CONTINUED

(Please attach additional sheets if more space is needed):

Name of Individual or Business Entity	Home Address (for Individuals) or Business Address

Part III DISCLOSURE OF 10% OR GREATER OWNERSHIP IN THE STOCKHOLDERS, PARTNERS OR LLC MEMBERS LISTED IN PART II

If a bidder has a direct or indirect parent entity which is publicly traded, and any person holds a 10 percent or greater beneficial interest in the publicly traded parent entity as of the last annual federal Security and Exchange Commission (SEC) or foreign equivalent filing, ownership disclosure can be met by providing links to the website(s) containing the last annual filing(s) with the federal Securities and Exchange Commission (or foreign equivalent) that contain the name and address of each person holding a 10% or greater beneficial interest in the publicly traded parent entity, along with the relevant page numbers of the filing(s) that contain the information on each such person. **Attach additional sheets if more space is needed.**

Website (URL) containing the last annual SEC (or foreign equivalent) filing	Page #'s

STATEMENT OF OWNERSHIP DISCLOSURE - CONTINUED

Please list the names and addresses of each stockholder, partner or member owning a 10 percent or greater interest in any corresponding corporation, partnership and/or limited liability company (LLC) listed in Part II **other than for any publicly traded parent entities referenced above**. The disclosure shall be continued until names and addresses of every noncorporate stockholder, and individual partner, and member exceeding the 10 percent ownership criteria established pursuant to N.J.S.A. 52:25-24.2 has been listed. **Attach additional sheets if more space is needed.**

Stockholder/Partner/Member and Corresponding Entity Listed in Part II	Home Address (for Individuals) or Business Address

Part IV Certification

I, being duly sworn upon my oath, hereby represent that the foregoing information and any attachments thereto to the best of my knowledge are true and complete. I acknowledge: that I am authorized to execute this certification on behalf of the bidder/proposer; that the **County of Union** is relying on the information contained herein and that I am under a continuing obligation from the date of this certification through the completion of any contracts with **County of Union** to notify the **County of Union** in writing of any changes to the information contained herein; that I am aware that it is a criminal offense to make a false statement or misrepresentation in this certification, and if I do so, I am subject to criminal prosecution under the law and that it will constitute a material breach of my agreement(s) with the, permitting the **County of Union** to declare any contract(s) resulting from this certification void and unenforceable.

Full Name (Print):		Title:	
Signature:		Date:	

Bidder's Name _____

SUBCONTRACTOR IDENTIFICATION STATEMENT

LIST OF SUBCONTRACTORS

This form is ONLY required for plumbing and gas fitting, steam and hot water heating and ventilating apparatus, steam power plants, electrical work, structural steel, ornamental iron work, and any other trades required to be identified by the specifications (including, but not limited, to satisfying any DPMC Classification requirements).

CHECK THIS BOX IF NONE OF THE ABOVE LISTED TRADES OR THOSE REQUIRED TO BE IDENTIFIED IN THE SPECIFICATIONS ARE TO BE USED TO PERFORM THE WORK

In compliance with N.J.S.A. 40A:11-16 and the bid specifications, the undersigned hereby lists the name or names of the following subcontractors:

Company Name: _____

Address: _____

Telephone: _____ Subcontract Amount: \$ _____

Specific Scope of Work Subcontracted: _____

License No. _____

Company Name: _____

Address: _____

Telephone: _____ Subcontract Amount: \$ _____

Specific Scope of Work Subcontracted: _____

License No. _____

Company Name: _____

Address: _____

Telephone: _____ Subcontract Amount: \$ _____

Specific Scope of Work Subcontracted: _____

License No. _____

IF MORE THAN THREE SUBCONTRACTORS, PLEASE COPY THIS SHEET AS NECESSARY AND ATTACH TO THE BID PACKAGE.

(Continued on following page)

Bidder's Name _____

SUBCONTRACTOR IDENTIFICATION CERTIFICATION

Note the law does not permit the listing of alternate subcontractors. However, multiple subcontractors for the same trade are permitted to be named provided the bidder meets the following requirements:

- Bidder identifies each subcontractor named for that category;
- Bidder states the scope of work, goods and services (the portion of the work) to be performed by each subcontractor; and
- Bidder provides the price quote provided by each subcontractor.

The bidder is advised that any change of subcontractor(s) from ones listed herein is subject to the County's approval. Change of subcontractor(s) will be approved only if made for good cause and not as a result of an arbitrary purpose.

The undersigned Bidder certifies and declares that the subcontractors listed above shall be used as subcontractors to complete certain portions of the work in this project as set forth in N.J.S.A. 40A: 11-16.

Witness

Date _____

NAME OF BIDDER

ADDRESS

By: _____
ORIGINAL SIGNATURE ONLY

PRINT NAME AND TITLE

Bidder's Name: _____

ACKNOWLEDGMENT OF ADDENDUM

COUNTY OF UNION

(Name of Construction /Public Works Project)

(Project or Bid Number)

Pursuant to N.J.S.A. 40A:11-23.1a., the undersigned bidder, hereby acknowledges receipt of the following notices, revisions, or addenda to the bid advertisement, specifications or bid documents. By indicating date of receipt, bidder acknowledges the submitted bid takes into account the provisions of the notice, revision or addendum. Note that the County of Union's record of notice to bidders shall take precedence and that failure to include provisions of changes in a bid proposal may be subject for rejection of the bid.

Local Unit Reference Number or Title of Addendum/Revision	How Received (mail, fax, pick-up, etc.)	Date Received

ACKNOWLEDGMENT BY BIDDER:

NAME OF BIDDER: _____

ORIGINAL SIGNATURE: _____

PRINTED NAME AND TITLE: _____

DATE: _____

CONTRACTOR BUSINESS REGISTRATION CERTIFICATE

New Mandatory Requirement - Effective 1/18/2010

The recently enacted **P.L. 2009, c.315**, requires that effective January 18, 2010; a contracting agency must receive proof of the bidder's business registration prior to the award of a contract. However, the proof must show that the bidder was in fact registered with the State of New Jersey Department of the Treasury, Division of Revenue and obtained the business registration prior to the receipt of bids.

If subcontractors are named on the bid, proof of the business registration for each subcontractor must be provided prior to the award of bid. Similarly to the bidder, the proof must show that each subcontractor was registered with the State of New Jersey Department of the Treasury, Division of Revenue and obtained the business registration prior to the receipt of bids.

Proof of business registration shall be

- A copy of a Business Registration Certificate issued by the Department of the Treasury, Division of Revenue; or
- A copy of the web version provided by the NJ Division of Revenue, or

Register online at www.nj.gov/treasury/revenue/taxreg.htm. Click the "online" link and then select "Register for Tax and Employer Purposes or call the Division at 609-292-1730.

Note: A NJ Certificate of Authority is not acceptable.

FAILURE to submit proof of registration of the bidder or any subcontractor named on the bid prior to the award of a contract shall be cause to reject the bids.

FAILURE of the bidder or any subcontractor named on the bid to be registered prior to the receipt of bids is cause for a **MANDATORY REJECTION** of bids. (A NON-WAIVABLE DEFECT). This covers construction work as well as non-construction bids.

IN ADDITION:

The contractor shall provide written notice to all **subcontractors and suppliers** not specifically named on the bid of the responsibility to register and submit proof of business registration to the contractor. The requirement of proof of business registration extends down through all levels (tiers) of the project.

Before final payment on the contract is made by the contracting agency, the contractor shall submit an accurate list and the proof of business registration of each subcontractor or supplier used in the fulfillment of the contract, or shall attest that no subcontractors were used.

For the term of the contract, the contractor and each of its affiliates and a subcontractor and each of its affiliates [N.J.S.A. 52:32-44(g)(3)] shall collect and remit to the Director, New Jersey Division of Taxation, the use tax due pursuant to the Sales and Use Tax Act on all sales of tangible personal property delivered into this State, regardless of whether the tangible personal property is intended for a contract with a contracting agency.

A business organization that fails to provide a copy of a business registration as required pursuant to section 1 of P.L.2001,c.134 (C.52:32-44 et al.) or subsection e. or f. of section 92 of P.L.1977,c.110 (C.5:12-92), or that provides false business registration information under the requirements of either of those sections, shall be liable for a penalty of \$25 for each day of violation, not to exceed \$50,000 for each business registration copy not properly provided under a contract with a contracting agency.

Bidder's Name _____

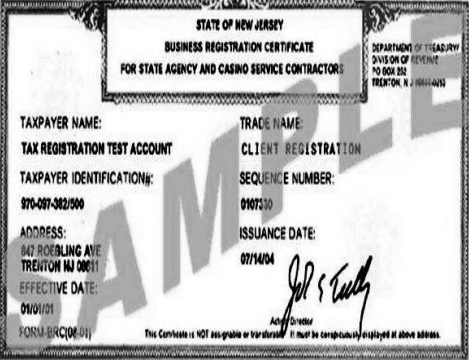
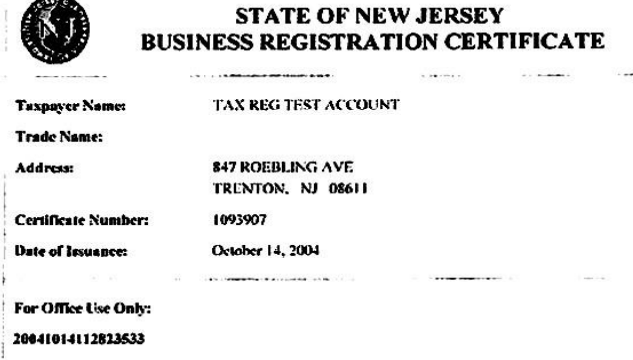
BUSINESS REGISTRATION
Mandatory Requirement

P.L. 2009, c.315, requires that effective January 18, 2010; a contracting agency must receive proof of the bidder's business registration prior to the award of a contract. However, the proof must show that the bidder was in fact registered with the State of New Jersey Department of the Treasury, Division of Revenue and obtained the business registration prior to the receipt of bids.

If subcontractors are named on the bid, proof of the business registration for each must be provided prior to the award of a contract. Similarly to the bidder, the proof must show that each subcontractor was registered with the State of New Jersey Department of the Treasury, Division of Revenue and obtained the business registration prior to the receipt of bids.

Proof of business registration shall be:

- A copy of a Business Registration Certificate issued by the Department of Treasury, Division of Revenue; or
- A copy of the web printed version provided by the NJ Division of Revenue

 <p>STATE OF NEW JERSEY BUSINESS REGISTRATION CERTIFICATE FOR STATE AGENCY AND CASINO SERVICE CONTRACTORS</p> <p>TAXPAYER NAME: TAX REGISTRATION TEST ACCOUNT TRADE NAME: CLIENT REGISTRATION TAXPAYER IDENTIFICATION: 070-007-082/000 SEQUENCE NUMBER: 0107510 ADDRESS: 847 ROEBLING AVE, TRENTON, NJ 08611 ISSUANCE DATE: 07/14/04 EFFECTIVE DATE: 01/01/01</p> <p>APPROVED: <i>[Signature]</i> Accepted for use</p> <p><small>This Certificate is NOT assignable or transferable. It must be conspicuously displayed at above address.</small></p>	 <p>STATE OF NEW JERSEY BUSINESS REGISTRATION CERTIFICATE</p> <p>Taxpayer Name: TAX REG TEST ACCOUNT Trade Name: Address: 847 ROEBLING AVE, TRENTON, NJ 08611 Certificate Number: 1093907 Date of Issuance: October 14, 2004</p> <p>For Office Use Only: 20041014112623533</p>
---	---

ATTACH BRC HERE

Bidder's Name _____

AFFIRMATIVE ACTION REQUIREMENT

REQUIRED AFFIRMATIVE ACTION EVIDENCE

General Requirements of P.L. 1975, c. 127: You are hereby put on notice that:

CONSTRUCTION CONTRACTS: The successful contractor must submit within three (3) days of the notice of intent to award or the signing of the contract the initial project manning report (A.A.201). This report should be submitted at the time the signed contract is returned to the County of Union. Attention: *Affirmative Action Officer*.

If the successful contract does not submit the initial project manning report (A.A.201) within the three (3) days from the time the signed contract is returned to the County of Union, the County of Union WILL declare the contractor non-responsive and award the contract to the next lowest responsible bidder.

NAME OF BIDDER

ORIGINAL SIGNATURE

PRINT OR TYPE NAME AND TITLE

DATE THIS FORM IS COMPLETED

EXPERIENCE STATEMENT

I hereby certify that my company has performed the following private or public work, which is relevant to this bid. I further certify that my company has never defaulted under any contract. Should you not sign this form due to prior defaults, please provide details on an attached sheet.

Witness

Date

NAME OF BIDDER

ADDRESS

By: _____
ORIGINAL SIGNATURE ONLY

PRINT NAME AND TITLE

YOU MAY ATTACH ADDITIONAL SHEETS, BUT YOU MUST SIGN AND WITNESS THIS SHEET.

Bidder's Name _____

NON-COLLUSION AFFIDAVIT

(N.J.S.A. 52:34-15)

STATE OF _____)
)SS: _____
COUNTY OF _____)

I _____, of the City of _____, in the County of _____, and the State of _____, of full age, being duly sworn according to law, on my oath depose and say that: I am _____ of the firm of _____, the bidder making the proposal for the above named project, and that I executed the said proposal for the above named project, and that I executed the said proposal with full authority to do so; that said bidder has not, directly or indirectly, entered into any agreement, participation in any collusion, or otherwise taken any action in restraint of free, competitive bidding in connection with the above named project; and that all statements contained in said proposal and in this Affidavit are true and correct, and made with full knowledge that the COUNTY OF UNION, NEW JERSEY relies upon the truth of the statements contained in said proposal and in the statements contained in the affidavit in awarding the contract for the said project.

I further warrant that no person or selling agency has been employed or retained to solicit or secure such contract upon an agreement or understanding for a commission, percentage, brokerage or contingent fee, except bona fide employees or bonafide established commercial or selling agencies maintained by _____ (N.J.S.A. 52:34-15).

NAME OF BIDDER

ORIGINAL SIGNATURE ONLY

NOTE: The person who signed the bidder signature page for the bidder should sign this form also.

Subscribed and sworn before me
this ____ day of _____, 20____.

Notary Public of the State of _____
My commission expires: _____

WARNING: IF YOU FAIL TO FULLY, ACCURATELY, AND COMPLETELY FILL OUT THIS AFFIDAVIT OF NON-COLLUSION, YOUR BID MAY BE REJECTED.

Contractor Registration Advisement
For Public Works Projects

A new law, known as “The Public Works Contractor Registration Act” (P.L. 1999, c.238), became effective April 11, 2000. Under the Act, no contractor/subcontractor will be permitted to bid on or engage in any contract for public work, as defined in Section 2 of P.L. 1963, c.150 (C:34:11-56.26), unless that contractor/subcontractor is registered with the New Jersey Department of Labor. The Act provides that upon registration with the Department, a public works contractor/subcontractor will be issued a certificate by the Department indicating compliance with the Act’s requirements. The registration fee has been set at \$300.00 per year. Upon the effective date of the Act, public bodies will be expected to request production of such a certificate from those bidding on or engaging in public works projects.

It is important to note that the term “contractor,” is defined in the, Act as, “a person, partnership, association, joint stock company, trust, corporation or other legal business entity or successor thereof who enters into a contract which is subject to the provision of the “New Jersey Prevailing Wage Act,” P.L. 1963, c.150 (C.34:11-56.25, et seq.) for the construction, reconstruction, demolition, alteration, repair or maintenance of a public building regularly open to and used by the general public or a public institution, and includes any subcontractor or lower tier subcontractor as defined herein: except that, for the purposes of the act, no pumping station, treatment plant or other facility associated with utility and environmental construction, reconstruction, demolition, alteration, repair or maintenance shall be regarded as a public building regularly open to and used by the general public or a public institution.”

Registration forms, copies of the Act, and other relevant information can be obtained by contacting:

Contractor Registration Unit
New Jersey Department of Labor
Division of Wage & Hour Compliance
PO Box 389
Trenton, New Jersey 08625-0389
Telephone: 609-292-9464
Fax: 609-633-8591
E-mail: contreg@dol.state.nj.us

Bidder's Name _____

AMERICANS WITH DISABILITIES ACT
EQUAL OPPORTUNITY FOR INDIVIDUALS WITH DISABILITIES

The contractor and the County of Union (hereafter "Owner") do hereby agree that the provisions of Title II of the Americans With Disabilities Act of 1990 (the "Act") (42 U.S.C.S12.101 et seq.), which prohibits discrimination on the basis of disability by public entities in all services, programs and activities provided or made available by public entities, and the rules and regulations promulgated pursuant thereto, are made a part of this contract. In providing any aid, benefit, or service on behalf of the Owner pursuant to this contract, the contractor agrees that the performance shall be in strict compliance with the Act. In the event the contractor, its agents, servants, employees, or subcontractors violate or are alleged to have violated the Act during the performance of this contract, the contractor shall defend the Owner in any action or administrative proceeding commenced pursuant to this Act. The contractor shall indemnify, protect, and save harmless the Owner, its agents, servants, and employees from and against any and all suits, claims, losses, demands, or damages of whatever kind or nature arising out of or claimed to arise out of the alleged violation. The contractor shall, at its own expense, appear, defend, and pay any and all charges for legal services and any and all costs and other expenses arising from such action or administrative proceeding or incurred in connection therewith. In any and all complaints brought pursuant to the Owner's grievance procedure, the contractor agrees to abide by any decision of the Owner which is rendered pursuant to said grievance procedure. If any action or administrative proceeding results in an award of damages against the Owner, or if the Owner incurs any expense to cure a violation of the ADA which has been brought pursuant to its grievance procedure, the contractor shall satisfy and discharge the same at its own expense.

The Owner shall, as soon as practicable after a claim has been made against it, give written notice thereof to the contractor along with full and complete particulars of the claim. If any action or administrative proceeding is brought against the Owner or any of its agents, servants, and employees, the Owner shall expeditiously forward or have forwarded to the contractor every demand, complaint, notice, summons, pleading, or process received by the Owner or its representatives.

It is expressly agreed and understood that any approval by the Owner of the services provided by the contractor pursuant to this contract will not relieve the contractor of the obligation to comply with the Act and to defend, indemnify, protect, and save harmless the Owner pursuant to this paragraph.

It is further agreed and understood that the Owner assumes no obligation to indemnify or save harmless the contractor, its agents, servants, employees and subcontractors for any claim which may arise out of their performance of this Agreement. Furthermore, the contractor expressly understands and agrees that the provisions of this indemnification clause shall in no way limit the contractor's obligations assumed in this Agreement, nor shall they be construed to relieve the contractor from any liability, nor preclude the Owner from taking any other actions available to it under any other provisions of this Agreement or otherwise at law.

Name _____ (Please print or type)

Signature _____ Date _____

Bidder's Name _____

STATEMENT OF BIDDER'S QUALIFICATIONS

All questions must be answered and the data given must be clear and comprehensive. This statement must be notarized. Questions may be answered on separate attached sheets. The Bidder may submit any additional information it desires.

1. _____
(Name of Bidder)

2. _____
(Permanent Main Office Address)

3. _____
(When Organized)

4. _____
(If a Corporation, where incorporated)

5. Number of years your organization has been engaged in construction or contracting business under present firm or trade name? _____

6. How many years of experience in construction work has your organization had (a) as a general contractor? And/or (b) As a subcontractor? _____

7. Contracts on hand: (Attach a list or table showing gross amounts of each Contract and the appropriate dates of completion) _____

8. General character of work performed by you. _____

9. Have you ever failed to complete any work awarded to you? _____

10. Have you ever defaulted on a Contract? _____ If so, complete details, including where and why?

Bidder's Name _____

STATEMENT OF BIDDER'S QUALIFICATIONS - (continued)

11. Has any officer or partner of your organization ever failed to complete a construction contract handled in its own name? If so, state name of individual, name of owner, location and type of project, and reason for the failure to complete. _____

12. List your major equipment available for this Contract.

13. Experience in the construction work similar in importance to this Project.

14. Have you had any material adverse changes from the trades as listed in NJ Notice of Classification within last five (5) years? _____. If so, list prior classification.

15. Background and experience of the principal members of your organization, including the officers.

Individual's Name	Present Position or Office	Yrs. of Construction Experience	Magnitude & Type of Work	In What Capacity

16. Bank Reference. (Name, Address, Phone, Representative) _____
17. Will you, upon request, fill out a detailed financial statement and furnish any other information that may be required by the proper agency? _____
18. The undersigned, hereby authorizes and requests any person, firm or corporation to furnish any information requested by the proper agency in verification of the responses comprising this Statement of Bidder's Qualifications.
17. Bidder's telephone number, fax number and e-mail address (if applicable).
- Phone _____
- Fax _____
- E-mail _____
- Mobile _____

Dated at _____ this _____ day of _____, 20____.

BIDDER (Signature)

BIDDER (Print Name)

Subscribed and sworn to before me
this _____ day of _____, 20__.

(Seal) Notary Public of New Jersey/
Specify Other State
My Commission Expires _____, 20__.

**NOTE: FAILURE TO COMPLETE AND SUBMIT THIS DOCUMENT WITH YOUR PROPOSAL
MAY RESULT IN A REJECTION OF YOUR BID.**

Bidder's Name _____

CONTRACTOR PERFORMANCE RECORD

List all contracts completed by you below or provide separate form.

Name of Owner	Name & Location of Project: Type Of Work	Prime or Sub-Cont.	Engineer or Architect in Charge for Owner	Contract Price (Omit Cost)	Date Completed	Was Time* Extension Necessary	Were Any Penalties Imposed	Were Liens* Claims or Stop Notice Filed

* If answer is YES, provide explanation of details in connection with non-completion of contracts, time extensions, penalties imposed, labor troubles, liens, claims and notices filed against contracts listed in preceding item "Performance Record" on an attached sheet.

NOTE: FAILURE TO COMPLETE AND SUBMIT THIS DOCUMENT WITH YOUR PROPOSAL MAY RESULT IN A REJECTION OF YOUR BID.

Bidder's Name _____

CERTIFICATION

The information above is true and complete to the best of my knowledge and belief.

(Name of Organization)

(Signature)

(Title)

Subscribed and sworn to before me
This _____ day of _____, 20__.

(Seal) Notary Public of New Jersey/
Specify Other State
My Commission Expires _____, 20__.

Bidder's Name _____

**AFFIDAVIT REGARDING LIST OF DEBARRED,
SUSPENDED OR DISQUALIFIED BIDDERS**

STATE OF NEW JERSEY / _____)
COUNTY OF _____) Specify, if Other) SS:

I, _____, of the (City, Town, Borough, etc.) of _____
_____ State of _____, of full age, being duly sworn according
to law on my oath depose and say that:

I am _____ of the firm of _____,
the Bidder making the Proposal for the above named Project. I have executed the said Proposal with full
authority to do so. Said Bidder is not at the time of the making this bid included on the New Jersey State
Treasurer's or the Federal Government's List of Debarred, Suspended or Disqualified Bidders as a result
of action taken by any State or Federal Agency.

Name of Contractor

By: _____
(Signature of Authorized Representative)

Subscribed and sworn to before me
this _____ day of _____, 20__.

(Seal) Notary Public of New Jersey/
Specify Other State
My Commission Expires _____, 20__.

**NOTE: FAILURE TO COMPLETE AND SUBMIT THIS DOCUMENT WITH YOUR
PROPOSAL MAY RESULT IN A REJECTION OF YOUR BID.**

PRIOR NEGATIVE EXPERIENCE QUESTIONNAIRE

(N.J.S.A. 40A:11-4)

1. Within the past ten (10) years, have you been found, through either court adjudication, arbitration, mediation, or other contractually stipulated alternate dispute resolution mechanism, to have: failed to provide or perform goods or services; or failed to complete a contract in a timely manner; or otherwise performed unsatisfactorily under a prior contract with a public entity?

_____yes _____no If yes, please provide full, detailed explanation.

2. Within the past ten (10) years, have you defaulted on a contract, thereby requiring a public entity to utilize the services of another contractor to provide the goods or perform the services or to correct or complete the contract?

_____yes _____no If yes, please provide full, detailed explanation.

3. Within the past ten (10) years, have you defaulted on a contract, thereby requiring a public entity to look to your surety for completion of the contract or tender of the costs of completion?

_____yes _____no If yes, please provide full, detailed explanation.

4. Within the past ten (10) years, have you been debarred or suspended from contracting with any of the agencies or department of the executive branch of the State of New Jersey at the time of the contract award, where the action was based on failure to perform a contract for goods or services with a public entity?

_____yes _____no If yes, please provide full, detailed explanation.

Bidder's Name _____

PRIOR NEGATIVE EXPERIENCE CERTIFICATION

I hereby certify that the above statements are true and accurate as of this _____ day
of _____, 20__.

Name of Contractor

By _____
(Signature of Authorized Representative)

Subscribed and sworn to before me
This _____ day of _____, 20__.

(Seal) Notary Public of New Jersey/
Specify Other State
My Commission Expires _____, 20__.

**NOTE: FAILURE TO COMPLETE AND SUBMIT THIS DOCUMENT WITH YOUR
PROPOSAL MAY RESULT IN A REJECTION OF YOUR BID.**

Bidder's Name _____

TO BE COMPLETED ONLY WHEN FINAL PAYMENT IS REQUESTED

CONTRACTOR'S CERTIFICATION OF COMPLIANCE -NEW JERSEY PREVAILING WAGE ACT

TO: County of Union
Division of Engineering
2325 South Avenue
Scotch Plains, New Jersey 07076

CONTRACT: _____

PROJECT: _____

In accordance with the requirements of the New Jersey Prevailing Wage Act, N.J.S.A. 34:11-56 et al *, the undersigned contractor on the public work being performed for:

COUNTY OF UNION

hereby certifies that he/she has complied with the contract requirements regarding the payment of the minimum prevailing wages established under "The New Jersey Prevailing Wage Act" N.J.S.A. 34:11-56 et al.

CONTRACTOR: _____

ADDRESS: _____

BY: _____

ORIGINAL SIGNATURE ONLY

STATE OF NEW JERSEY
COUNTY OF _____

Being by me duly sworn according to law, on his oath deposes and says that _____ is _____ of _____ the above named contractor, and that the facts set forth in the above statement are true.

Subscribed and sworn before me
this ____ day of _____, 20__.

Notary Public: _____

My Commission Expires: _____

* N.J.S.A. 34:11-56.33 requires the contractor and subcontractor to file written statements with the public body in form satisfactory to the Commissioner certifying to the amounts then due and owing from such contractor and subcontractor filing such statement to any and all workmen for wages due on account of the public work, setting forth therein the names of the persons whose wages are unpaid and the amount due to each respectively. Union County will withhold the amount so deducted for the benefit of the workmen whose wages are unpaid as shown by the verified statement filed, and will pay directly to any workman the amount shown by such statement to be due to him for such wages. Such payment shall thereby discharge the obligation of the contractor to the person receiving such payment to the extent of the amount thereof.

Bidder's Name _____

UNCOMPLETED CONTRACTS AFFIDAVIT
(To be submitted with DPMC Form 701)

PURSUANT TO N.J.A.C. 17:19-2.13, BIDDER DECLARES THE FOLLOWING WITH RESPECT TO ITS UNCOMPLETED CONTRACTS, ON ALL WORK, FROM WHATEVER SOURCE (PUBLIC AND PRIVATE), BOTH IN NEW JERSEY AND FROM OTHER GOVERNMENTAL JURISDICTIONS

ENTITY	PROJECT TITLE	ORIGINAL CONTRACT AMOUNT	UNCOMPLETED AMOUNT AS OF BID OPENING DATE	NAME AND TELEPHONE NUMBER OF PARTY TO BE CONTACTED FROM ENTITY FOR VERIFICATION

TOTAL AMOUNT OF UNCOMPLETED CONTRACTS \$ _____

Sworn and Subscribed to Before me

This _____ day of _____ 20____

Notary Public

BIDDER:

(Signature)

(Print Name)

NOTE: FAILURE TO COMPLETE AND SUBMIT THIS DOCUMENT WITH YOUR PROPOSAL MAY RESULT IN A REJECTION OF YOUR BID.

Bidder's Name _____

CERTIFICATE OF INSURANCE STATEMENT

The Bidder fully understands the County of Union insurance requirements as stated in the Instructions to Bidders as well as the Owner/Contractor Agreement and agrees to provide all insurance required by these documents prior to the issuance of the Notice to Proceed.

BIDDER (Signature)

BIDDER (Print Name)

NOTE: FAILURE TO COMPLETE AND SUBMIT THIS DOCUMENT WITH YOUR PROPOSAL MAY RESULT IN A REJECTION OF YOUR BID.

Bidder's Name _____

COLLECTION OF USE TAX ON SALES TO LOCAL GOVERNMENTS STATEMENT

The Bidder fully understands the requirements of the use tax on sales to local governments as stated in the General Conditions to the Contract for Construction and the Instructions to Bidders, and agrees at all times to comply with the "Contractor Use Tax Collection Legislation", as defined therein, and the terms relating thereto contained in the Contract Documents.

BIDDER (Signature)

BIDDER (Print Name)

NOTE: FAILURE TO COMPLETE AND SUBMIT THIS DOCUMENT WITH YOUR PROPOSAL MAY RESULT IN A REJECTION OF YOUR BID.

Bidder's Name _____

TIME OF COMPLETION

The undersigned proposed that if awarded the Contract, the scope of work will be started within ten (10) calendar days and will be substantially completed within **180 calendar days** from the date of the notice to proceed.

I, _____ of _____
NAME (Print or type) COMPANY

Agree to complete work in the time frame specified _____
SIGNATURE

SITE VISIT – GENERAL CONTRACTOR

I, _____ of _____
NAME (Print or type) COMPANY

Visited the site of the work on _____
SIGNATURE

COUNTY OF UNION NEW JERSEY
Division of Purchasing
DISCLOSURE OF INVESTMENT ACTIVITIES IN IRAN

Solicitation Number: _____ Bidder/Offeror: _____

Pursuant to Public law 2012, c. 25, any person or entity that submits a bid or proposal or otherwise proposes to enter into or renew a contract must complete the certification below to attest, under penalty of perjury, that the person or entity, or one of the person or entity's parents, subsidiaries, or affiliates, is not identified on a list created and maintained by the Department of the Treasury as a person or entity engaging in investment activities in Iran. If the Director finds a person or entity to be in violation of the principles which are the subject of the law, s/he shall take action as may be appropriate and provided by law, rule or contract, including but not limited to, imposing sanctions, seeking compliance, recovering damages, declaring the party in default and seeking debarment or suspension of the person or entity.

I certify, pursuant to Public Law 2012, c. 25, that the person or entity listed above for which I am authorized to bid/renew:

is not providing goods or services of \$20,000,000 or more in the energy sector of Iran, including a person or entity that provides oil or liquefied natural gas tankers, or products used to construct or maintain pipe lines used to transport oil or liquefied natural gas, for the energy sector of Iran,
AND

is not a financial institution that extends \$20,000,000 or more in credit to another person or entity, for 45 days or more, if that person or entity will use the credit to provide goods or services in the energy sector in Iran.

In the event that a person or entity is unable to make the above certification because it or one of its parents, subsidiaries, or affiliates has engaged in the above-referenced activities, a detailed, accurate and precise description of the activities must be provided in part 2 below to the Division of Purchase under penalty of perjury. Failure to provide such will result in the proposal being rendered as non-responsive and appropriate penalties, fines and/or sanctions will be assessed as provided by law.

PART 2: PLEASE PROVIDE FURTHER INFORMATION RELATED TO INVESTMENT ACTIVITIES IN IRAN. You must provide, accurate and precise description of the activities of the bidding person/entity, or one of its parents, subsidiaries or affiliates, engaging in the investment activities in Iran outlined above by completing the boxes below.

Name _____ Relationship to Bidder/Offeror _____

Description of Activities _____

Duration of Engagement _____ Anticipated Cessation Date _____

Bidder/Offeror Contact Name _____ Contact Phone Number _____

Certification: I, being duly sworn upon my oath, hereby represent and state that the foregoing information and any attachments thereto to the best of my knowledge are true and complete. I attest that I am authorized to execute this certification on behalf of the above referenced person or entity. I acknowledge that Union County is relying on the information contained herein and hereby acknowledge that I am under a continuing obligation from the date of this certification through the completion of any contracts with the County to notify the County in writing of any changes to the answers of information contained herein. I acknowledge that I am aware that it is a criminal offense to make a false statement or misrepresentation in this certification, and if I do so, I recognize that I am subject to criminal prosecution under the law and that it will also constitute a material breach of my agreement(s) with Union County, New Jersey and that the County at its option may declare any contract(s) resulting from this certification void and unenforceable.

Full Name (Print) _____ Signature _____

Title _____ Date _____

STANDARD SPECIFICATIONS

The Standard Specifications for Road and Bridge Construction of New Jersey Department of Transportation, 2007 Edition; is added to and/or amended elsewhere herein by the Notice to Contractors (Advertisement), Proposal, Information for Bidders, General Conditions, Special Provisions, Project Plans, and Supplementary Specifications; shall, insofar as technical requirements are involved, govern in the execution of this project.

Such Standard Specifications are made a part of these Specifications by this reference and will not be repeated herein. It is the responsibility of prospective bidders to familiarize themselves with these Standard Specifications, copies of which may be examined at the office of the Engineer and may be obtained, upon payment of the cost thereof, from:

Department of Transportation
State of New Jersey
1035 Parkway Avenue
Trenton, New Jersey 08625

The Notice to Bidders (Advertisement), Proposal, General Conditions, Instructions to Bidders, Special Provisions, Project Plans and/or Technical Specifications shall govern and prevail in the case of conflict between them and the Standard Specifications.

In these Standard Specifications the words "COMMISSIONER" or "DEPARTMENT" shall refer to and mean the person, persons, body, board or agent legally empowered to enter into contracts and otherwise legally act for the Owner. The words "RESIDENT ENGINEER (RE)", "ENGINEER" or "STATE" shall refer to and mean the professional engineering representative of the Owner as hereinbefore defined and the word "INSPECTOR" shall mean the authorized project representative of the Engineer with the authority as hereinbefore defined. The word "LABORATORY" shall mean and refer to the Engineer who may, at his discretion, and with the consent of the Owner, employ qualified technical personnel or testing laboratories to assist him in fulfilling the duties normally assigned to the "LABORATORY" in these Standard Specifications.

When reference is made herein to the bulletins, standards, specifications, publications or requirements of the Manual on Uniform Traffic Control Devices (MUTCD), Institute of Traffic Engineers (ITE), Federal Highway Administration (FHWA), American Association of State Highway Officials (AASHTO), the American Concrete Institute (ACI), the American Society of Civil Engineers (ASCE) or similar national or regional societies, associations, institutes or organizations; the requirements of the bulletins, specifications, publications or requirements referred to shall be considered a part of these Specifications by such reference and shall not be repeated herein but shall have the same import and be as binding as if herein set forth in full.

DRAFT AIA Document A101™ - 2007

Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum

AGREEMENT made as of the day of in the year
(In words, indicate day, month and year.)

BETWEEN the Owner:
(Name, legal status, address and other information)

and the Contractor:
(Name, legal status, address and other information)

for the following Project:
(Name, location and detailed description)

The County Engineer or his designee:
(Name, legal status, address and other information)

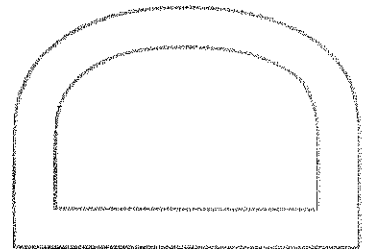
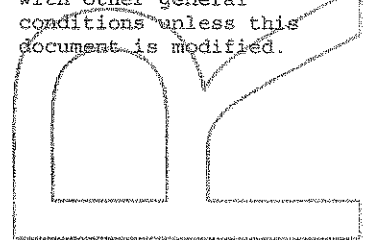
The Owner and Contractor agree as follows.



ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An Additions and Deletions Report that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

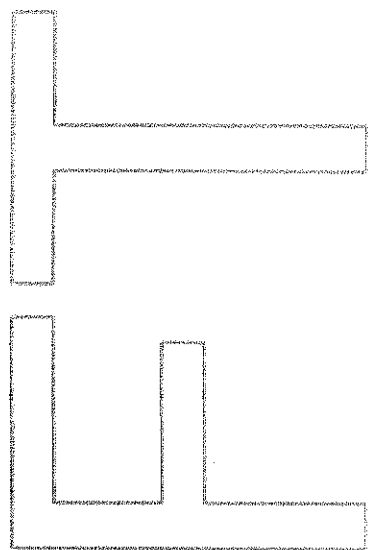
AIA Document A201™-2007, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.



ELECTRONIC COPYING of any portion of this AIA Document to another electronic file is prohibited and constitutes a violation of copyright laws as set forth in the footer of this document.

TABLE OF ARTICLES

- 1 THE CONTRACT DOCUMENTS
- 2 THE WORK OF THIS CONTRACT
- 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION
- 4 CONTRACT SUM
- 5 PAYMENTS
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- 8 MISCELLANEOUS PROVISIONS
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ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others. The Contractor will not be compensated for labor or materials outside the scope of work that is not properly authorized.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be the date of this Agreement unless a different date is stated below or provision is made for the date to be fixed in a Notice to proceed issued by the Owner, which is anticipated to be on or about

☐

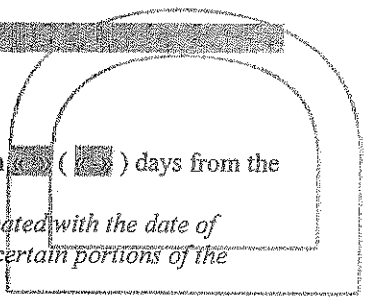
If, prior to the commencement of the Work, the Owner requires time to file mortgages and other security interests, the Owner's time requirement shall be as follows: Not applicable.

☐

§ 3.2 The Contract Time shall be measured from the date of commencement.

§ 3.3 The Contractor shall achieve Substantial Completion of the entire Work not later than ☐ (☐) days from the date of commencement, or as follows:

(Insert number of calendar days. Alternatively, a calendar date may be used when coordinated with the date of commencement. If appropriate, insert requirements for earlier Substantial Completion of certain portions of the Work.)



Portion of Work

Substantial Completion Date

Entire Work

TBD

, subject to adjustments of this Contract Time as provided in the Contract Documents.
(Insert provisions, if any, for liquidated damages relating to failure to achieve Substantial Completion on time or for bonus payments for early completion of the Work.)

« » Should the Contractor fail to complete fully, and in conformity with all provisions of the Contract within the Contract Time, the Contractor shall, and hereby agrees to pay the Owner One Thousand Dollars (\$1,000.00) per day for as liquidated damages, for each consecutive calendar day beyond the number of days allowed by the Contract, which sum is agreed upon as reasonable and proper measure of damages that the Owner will sustain per diem by failure of Contractor to complete Work within time as stipulated; it is being recognized by Owner and Contractor that the injury to Owner that could result from a failure of the Contractor to complete on schedule, is uncertain and cannot be computed exactly. In no way shall costs of Liquidated Damages to be construed as a penalty to the Contractor. (See Bid Documents)

ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be « » (\$ « »), subject to additions and deductions as provided in the Contract Documents.

§ 4.2 The Contract Sum is based upon the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the Owner:
(State the numbers or other identification of accepted alternates. If the bidding or proposal documents permit the Owner to accept other alternates subsequent to the execution of this Agreement, attach a schedule of such other alternates showing the amount for each and the date when that amount expires.)

« »
§ 4.3 Unit prices, if any:
(Identify and state the unit price; state quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price Per Unit (\$0.00)
« »	« »	« »

§ 4.4 Allowances included in the Contract Sum, if any:
(Identify allowance and state exclusions, if any, from the allowance price.)

Item	Price
« »	« »

ARTICLE 5 PAYMENTS

§ 5.1 PROGRESS PAYMENTS

§ 5.1.1 Based upon Applications for Payment submitted to the County Engineer or his designee by the Contractor and Certificates for Payment issued by the County Engineer or his designee, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

« »
§ 5.1.3 The Contractor shall submit a Preliminary Payment Request (Pencil Requisition) to the County Engineer or his designee on the twenty-fifth (25th) day of any given calendar month for Work performed during that month,

Upon receipt of the Pencil Requisition from the Contractor, the County Engineer or his designee shall review the Pencil Requisition and approve or disapprove of it in whole or in part as set forth hereafter. Within (4) calendar days of receipt of the Pencil Requisition from the Contractor, the County Engineer or his designee shall return the Pencil Requisition to the Contractor, with those charges that are approved or disapproved, if any, by the County Engineer or his designee, for the Contractor's incorporation into an Application for Payment. Within two (2) calendar days of return of the Pencil Requisition from the County Engineer or his designee, the Contractor shall submit a formal application for Payment to the County Engineer or his designee for review and approval by the County Engineer or his designee incorporating any revisions made by the County Engineer or his designee in the Pencil Requisition submission. Within five (5) calendar days of receipt of Contractor's Application for Payment, the County Engineer or his designee shall take any one of the following actions:

- 1) Certify the entire Application for Payment;
- 2) Certify partial payment and provide the Contractor with reasons for withholding the remaining portion of the payment; or
- 3) Withhold certification of the entire Application for Payment and provide the Contractor with reasons for withholding the entire payment,

Once the Application for Payment is certified either in whole or in part, the County Engineer or his designee shall transmit the Certified Payment Application within three (3) calendar days to the Owner for its review and payment. The Owner shall make payment to the Contractor for the Certified Payment Amount by no later than the time period set forth in the New Jersey Prompt Payment Act following receipt of the Certificate for Payment from the County Engineer or his designee. The Owner shall not be obligated to pay any Application for Payment until the Application for Payment is certified by the County Engineer or his designee. Approval of any Application for Payment may be withheld should the Contractor fail to submit Manning Reports in a timely manner.

Pursuant to N.J.S.A. 2A:30A-1 et seq. (the "Prompt Payment Act"), a public or governmental entity that requires the entity's governing body to vote on authorizations for each periodic payment, final payment, or retainage monies, such as the Owner, is excepted from the timing requirements of the Act. Accordingly, the Owner shall not approve the Contractor's Application for Payment until it is certified by the County Engineer or his designee in accordance herewith and shall not approve the Contractor's Certified Payment Application until the next scheduled public meeting of the Owner following the Owner's receipt of the Certified Payment Application from the County Engineer or his designee. The Owner shall not make payment to the Contractor for the Certified Payment Amount until the Owner's subsequent payment cycle following its approval of the Payment Application.

Pursuant to this same Act, if a payment due pursuant to the provisions herein is not made in a timely manner, the Owner shall be liable for the amount of money owed under the contract, plus interest at a rate equal to the prime rate plus one percent (1%), notwithstanding anything to the contrary in the Contract Documents. Interest on amounts due pursuant to the Act shall be paid to the prime contractor for the period beginning on the day after the required payment date and ending on the day on which the check for payment is received by the Contractor.

Pursuant to this same Act, disputes regarding whether a party has failed to make payments required by the Act may be submitted to a process of alternative dispute resolution, notwithstanding anything to the contrary in the contract documents, where the parties agree to same. Alternative dispute resolution permitted by the Act shall not apply to disputes concerning any other matters that may arise under or from this Contract. Any civil action brought to collect payments shall be conducted in Union County, State of New Jersey, and the prevailing party shall be awarded reasonable costs and attorneys' fees.

§5.1.4 The County Engineer or his designee may decide not to certify payment and may withhold a Certificate for Payment, in whole or in part, to the extent reasonably necessary to protect the Owner if, in the County Engineer or his designee's opinion, the representations as described in Section 5.1.5 below cannot be made to the Owner. If the County Engineer or his designee withholds a Certificate for Payment, the County Engineer or his designee will notify the Contractor and Owner as provided in Section 5.1.3 above. If the Contractor and County Engineer or his designee cannot agree on a revised amount, the County Engineer or his designee will issue a Certificate for Payment for the amount for which the County Engineer or his designee is able to make such representations to the Owner as set forth in Section 5.1.3 above. The County Engineer or his designee may also decide to withhold certifying

payment in whole or in part, or, because of subsequently discovered evidence or subsequent observations, to such extent as may be necessary in the County Engineer or his designee's opinion to protect the Owner from loss because of:

- .1 Defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims;
- .3 failure of the Contractor to make payments properly to Subcontractors or for labor, materials, or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or another contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or Liquidated Damages for the anticipated delay;
- .7 failure to carry out the Work in accordance with the Contract Documents;
- .8 avoidable delay in the progress of the Work;
- .9 deliberate delay in the submission for approval of names of Subcontractors, materialmen, sources of supply, shop drawings, and samples;
- .10 failure to maintain the Project Site in a safe and satisfactory condition in accordance with good construction practices as determined by the County Engineer or his designee; or
- .11 failure to submit updates as required by the General Conditions.

When the foregoing reasons for withholding certification are resolved, certification will be made for amounts previously withheld in the manner set forth in Section 5.1.3 above.

§5.1.5 The issuance of a separate Certificate for Payment will constitute representations made separately by the County Engineer or his designee to the Owner, based on its individual observations at the site and the data comprising the Application for Payment submitted by the Contractor, that the Work has progressed to the point indicated and that, to the best of the County Engineer or his designee's knowledge, information and belief, quality of the Work is in accordance with the Contract Documents.

The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to minor deviations from the Contract Documents correctable prior to completion and to specific qualifications expressed by the County Engineer or his designee. The

issuance of a separate Certificate of Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a separate Certificate for Payment will not be a representation that the County Engineer or his designees has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed the Contractor's construction means, methods, techniques, sequences or procedures; (3) reviewed copies of requisitions received from Subcontractor's and materials suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§5.1.6 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form and supported by such data to substantiate its accuracy as the County Engineer or his designee may require. This schedule, unless objected to by the County Engineer or his designee, shall be used as a basis for reviewing the Contractor's Applications for Payment.

§5.1.7 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.8 Subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

- .1 Take that portion of the Contract Sum properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the Contract Sum allocated to that portion of the Work in the schedule of values, less retainage of percent (%). Pending final determination of cost to the Owner of changes in the Work, amounts not in dispute shall be included as provided in Section 7.3.9 of AIA Document A201™-2007, General Conditions of the Contract for Construction;
- .2 Add that portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction (or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing), less retainage of percent (%);
- .3 Subtract the aggregate of previous payments made by the Owner; and
- .4 Subtract amounts, if any, for which the County Engineer or his designee has withheld or nullified a Certificate for Payment as provided in Section 9.5 of AIA Document A201-2007.

§5.1.9 The progress payment amount determined in accordance with Section 5.1.8 shall be further modified under the following circumstances:

- .1 Add, upon Substantial Completion of the Work, a sum sufficient to increase the total payments to the full amount of the Contract Sum, less such amounts as the County Engineer or his designee shall determine for incomplete Work, retainage applicable to such work and unsettled claims; and
- .2 Add, if final completion of the Work is thereafter materially delayed through no fault of the Contractor, any additional amounts payable in accordance with Section 9.10.3 of AIA Document A201-2007.

§5.1.10 Retainage shall be determined as follows: Pursuant to N.J.S.A. 40A:11-6.1, the Owner will withhold two percent (2%) of the amount due on each partial payment when the outstanding balance of the Contract exceeds One Hundred Thousand Dollars (\$100,000.00).

§5.1.11 Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 5.2 FINAL PAYMENT

§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

- .1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Section 12.2.2 of AIA Document A201-2007, and to satisfy other requirements, if any, which extend beyond final payment; and
- .2 a final Certificate for Payment has been issued by the County Engineer or his designee.

§ 5.2.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the County Engineer or his designee's final Certificate for Payment, or as follows:

« »

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 INITIAL DECISION MAKER

The County Engineer or his designee will serve as Initial Decision Maker pursuant to Section 15.2 of AIA Document A201-2007, unless the parties appoint below another individual, not a party to this Agreement, to serve as Initial Decision Maker.

(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the County Engineer or his designee.)

« »
« »
« »
« »

§ 6.2 BINDING DISPUTE RESOLUTION

Except as provided in Section 5.1.3 of the Standard Form of Agreement between the Owner and Contractor, all claims, disputes or other matters in question between the parties to this Contract, arising out of or relating to the Project or to the Contract, or the alleged breach hereof, shall be subject one to mediation, and if not resolved, then same shall be decided in a Court of competent jurisdiction venued in Union County, New Jersey. No party may be compelled to submit any dispute concerning the Project to arbitration. In the event any claim arising from the Project is beyond the jurisdiction of the court, the Contract consents to joinder as a party to such action or alternative dispute proceeding.

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201-2007.

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201-2007.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201-2007 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 Payments due and unpaid under the Contract shall in no instance bear interest, except as required by law in accordance with Section 5.1.3 hereof.

§ 8.3 The Contractor shall ensure that the Project Site is maintained in a clean and safe condition at all times, based upon Owner's sole discretion. If the Contractor fails to keep the Project Site in a clean and safe condition, said failure shall result in the following:

- .1 all claims resulting from the Contractor's failure shall be the Contractor's responsibility;
- .2 said failure shall constitute an act of default and a substantial breach of the Contract giving the Owner remedies under the contract Documents; and
- .3 the Owner shall have the right to withhold any payments until the Contractor cures its failure.

Failure to do so shall authorize the Owner to withhold any Applications for payment until such time as the Contractor has rectified same. Further, if the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the cost thereof shall be charged to the Contractor.

§ 8.4 Indemnification – See Indemnification Requirements in Bid Documents.

§ 8.5 The within contract shall be governed by and interpreted pursuant to the law of the State of New Jersey.

§ 8.6 The Contractor shall comply with the anti-discrimination provisions of N.J.S.A. 10:2-1 et seq., the New Jersey Law Against Discrimination, N.J.S.A. 10:5-1 et seq., N.J.A.C. 17:27-1.1 et seq. and shall guarantee to afford equal opportunity in performance of the Work in accordance with an affirmative action program approved by the State Treasurer. (See Page G-21).

§ 8.7 The Contractor shall submit proof of Business Registration for itself and its subcontractors to the Owner and shall provide written notice to its subcontractors and suppliers of the responsibility to submit proof of business registration to the contractor. The requirement of proof of Business Registration extends down through all levels (tiers) of the Project.

The Contractor agrees to comply with the rules and regulations promulgated pursuant to the Contractor Use Tax Collection Legislation.

For the term of the contract, the Contractor, any subcontractor, and each of their affiliates [N.J.S.A. 52:32-44(g)93], shall collect and remit to the New Jersey Director of the Division of Taxation in the Department of Treasury, the use tax due pursuant to the "Sales and Use Tax Act," P.L. 1966, c. 30 (C.54:32B-1 et seq.) on all of their sales of tangible personal property delivered into the State of New Jersey, regardless of whether the tangible personal property is intended for a contract with a contracting agency. For purposes herein, "affiliate" shall mean any entity that: (a)

directly, indirectly or constructively controls another entity; (b) is directly, indirectly, or constructively controlled by another entity; or (c) is subject to the control of a common entity. For purposes of the immediately preceding sentence, an entity controls another entity if it owns, directly or indirectly, more than fifty percent (50%) of the Ownership interest in that entity.

§8.8 This Standard Form of Agreement and the General Conditions set forth in the Bid Documents shall control in the case of conflict between these documents and the Project Specifications, the Project Manual, and any other exhibits incorporated by reference in this Contract.

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 The Contract Documents, except for Modifications issued after execution of this Agreement, are enumerated in the sections below, and incorporated herein as if set forth in their entirety.

§ 9.1.1 The Agreement is this executed AIA Document A101-2007, Standard Form of Agreement Between Owner and Contractor.

§ 9.1.2 The General Conditions are AIA Document A201-2007, General Conditions of the Contract for Construction.

§ 9.1.3 The Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

§ 9.1.4 The Specifications:

(Either list the Specifications here or refer to an exhibit attached to this Agreement.)

« See Specifications as referenced by Exhibit B.

Section	Title	Date	Pages

§ 9.1.5 The Drawings:

(Either list the Drawings here or refer to an exhibit attached to this Agreement.)

« See List of Drawings, annexed hereto as Exhibit C.

Number	Title	Date

§ 9.1.6 The Addenda, if any:

Number	Date	Pages

Portions of Addenda relating to bidding requirements are not part of the Contract Documents unless the bidding requirements are also enumerated in this Article 9.

§ 9.1.7 Additional documents, if any, forming part of the Contract Documents:

- 1 AIA Document E201™-2007, Digital Data Protocol Exhibit, if completed by the parties, or the following:

■

- 2 Other documents, if any, listed below:

■

ARTICLE 10 INSURANCE AND BONDS

The Contractor shall purchase and maintain insurance and provide bonds as set forth in Article 11 of AIA Document A201-2007.

(State bonding requirements, if any, and limits of liability for insurance required in Article 11 of AIA Document A201-2007.)

Type of insurance or bond

Limit of liability or bond amount (\$0.00)

This Agreement entered into as of the day and year first written above.

OWNER (Signature)

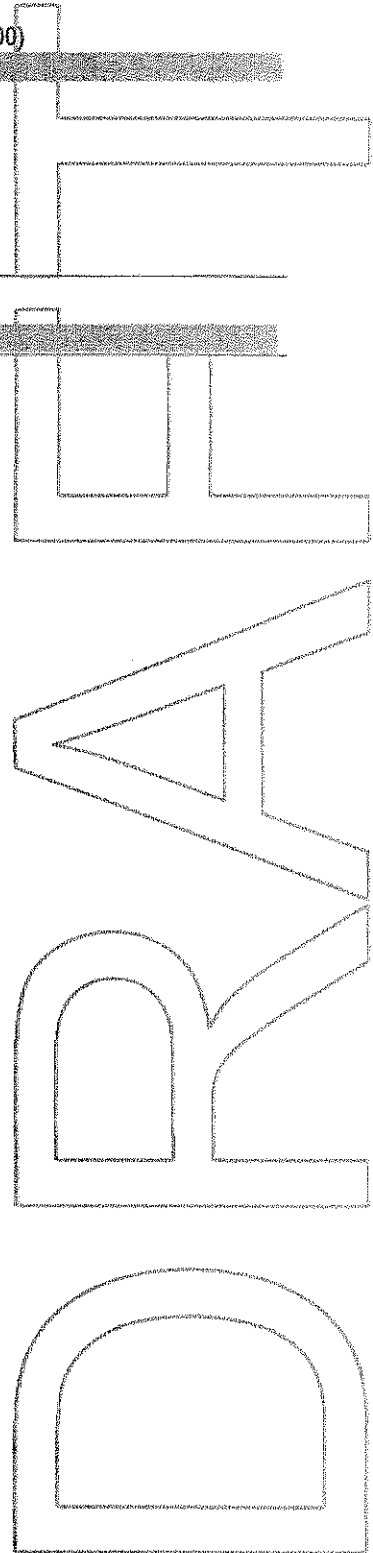
«) » « »

(Printed name and title)

CONTRACTOR (Signature)

«) » « »

(Printed name and title)



DRAFT AIA Document A201™ - 2007

General Conditions of the Contract for Construction

for the following PROJECT:

(Name and location or address)

«County of Union»

« »

THE OWNER:

(Name, legal status and address)

« »

« »

THE ENGINEER, OR HIS DESIGNEE :

(Name, legal status and address)

« »

« »

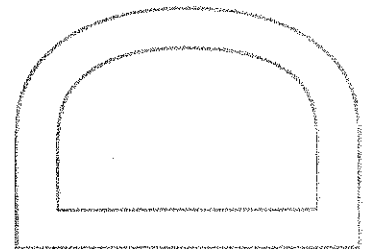
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ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An Additions and Deletions Report that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

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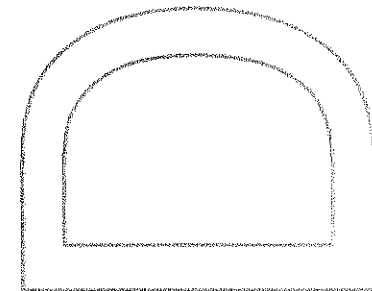
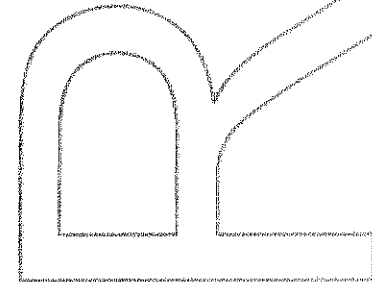
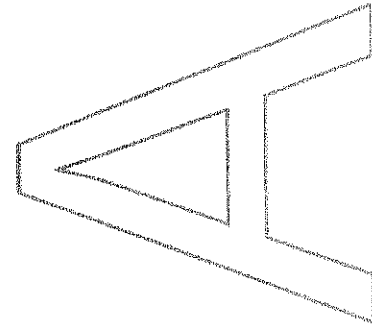
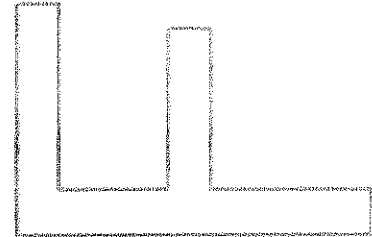
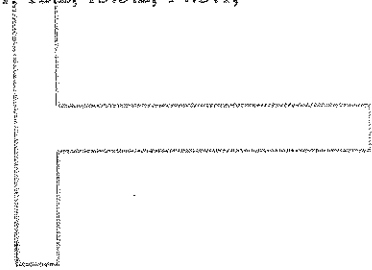
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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 BASIC DEFINITIONS

§ 1.1.1 THE CONTRACT DOCUMENTS

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect or Engineer. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding requirements.

§ 1.1.2 THE CONTRACT

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Engineer, or his designee or the Engineer, or his designee's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Engineer, or his designee or the Engineer, or his designee's consultants or (4) between any persons or entities other than the Owner and the Contractor. The Engineer, or his designee's shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Engineer, or his designee's duties.

§ 1.1.3 THE WORK

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 THE PROJECT

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by separate contractors.

§ 1.1.5 THE DRAWINGS

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.

§ 1.1.6 THE SPECIFICATIONS

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 INSTRUMENTS OF SERVICE

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Engineer, or his designee and the Engineer, or his designee's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 INITIAL DECISION MAKER

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2 and certify termination of the Agreement under Section 14.2.2.

§ 1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent

consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 CAPITALIZATION

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles or (3) the titles of other documents published by the American Institute of Engineer, or his designee s.

§ 1.4 INTERPRETATION

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS AND OTHER INSTRUMENTS OF SERVICE

§ 1.5.1 The Engineer, or his designee and the Engineer, or his designee 's consultants shall be deemed the authors and Owners of their respective Instruments of Service, including the Drawings and Specifications. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Engineer, or his designee or Engineer, or his designee 's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are authorized to use and reproduce the Instruments of Service provided to them solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers may not use the Instruments of Service on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Engineer, or his designee and the Engineer, or his designee 's consultants.

§ 1.6 TRANSMISSION OF DATA IN DIGITAL FORM

If the parties intend to transmit Instruments of Service or any other information or documentation in digital form, they shall endeavor to establish necessary protocols governing such transmissions, unless otherwise already provided in the Agreement or the Contract Documents.

ARTICLE 2 OWNER

§ 2.1 GENERAL

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided elsewhere in the Contract Documents, the Engineer, or his designee does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

§ 2.2.1 The Contractor may request in writing that the Owner provide reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only in the event that: (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) a change in the Work materially changes the Contract Sum. The Owner shall furnish such evidence as a condition precedent to commencement or continuation of the Work or the portion of the Work affected by a material change. After the Owner furnishes the evidence, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.2 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.2.3 If readily available, the Owner shall furnish surveys describing physical characteristics and legal limitations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work. The Contractor shall be responsible for requesting and obtaining a utility mark-out.

§ 2.2.4 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.2.5 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.3 OWNER'S RIGHT TO STOP THE WORK

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Article 12 or fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6. Owner shall in no way be responsible for any delays or claims arising from delays for enforcement of this Section.

§ 2.4 OWNER'S RIGHT TO CARRY OUT THE WORK

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Engineer, or his designee's additional services made necessary by such default, neglect or failure. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

ARTICLE 3 CONTRACTOR

§ 3.1 GENERAL

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located and shall maintain as current any approvals or certifications that may be required to perform the Work. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Engineer, or his designee in the Engineer, or his designee's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.2.3, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Engineer, or his designee any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Engineer, or his designee may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a Contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Engineer, or his designee any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Engineer, or his designee may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Engineer, or his designee issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall make Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Engineer, or his designee for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instructions concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the jobsite safety thereof and, except as stated below, shall be fully and solely responsible for the jobsite safety of such means, methods, techniques, sequences or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner and Engineer, or his designee and shall not proceed with that portion of the Work without further written instructions from the Engineer, or his designee. If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences or procedures without acceptance of changes proposed by the Contractor, the Owner shall be solely responsible for any loss or damage arising solely from those Owner-required means, methods, techniques, sequences or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 LABOR AND MATERIALS

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work authorized by the Engineer, or his designee in accordance with Sections 3.12.8 or 7.4, the Contractor may make substitutions only with the consent of the Owner, after

evaluation by the Engineer, or his designee and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.5 WARRANTY

The Contractor warrants to the Owner and Engineer, or his designee that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Engineer, or his designee, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. Such warranty shall continue for a period of one (1) year from the date of Substantial Completion of the Work. Under this warranty, the Contractor shall remedy at his expense any such failure for the Work to be conforming to the requirement of the Contract, or any other defect appearing in the Work. In addition, the Contractor shall remedy at his own expense, any damage to Owner's owned, controlled, real or personal property, when that damage is the result of the Contractor's failure to provide conforming Work as it relates to the Contract Documents or any other defect of equipment, material, workmanship or design. The Contractor shall also restore any Work damaged in fulfilling its obligations under the terms of this provision. The Contractor's warranty with respect to the Work repaired or replaced hereunder will run for a period of one (1) year from the date of repair or replacement.

§ 3.6 TAXES

The Contractor shall pay use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 PERMITS, FEES, NOTICES AND COMPLIANCE WITH LAWS

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 **Concealed or Unknown Conditions.** If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Engineer, or his designee before conditions are disturbed and in no event later than 21 days after first observance of the conditions. The Engineer, or his designee will promptly investigate such conditions and, if the Engineer, or his designee determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Engineer, or his designee determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Engineer, or his designee shall promptly notify the Owner and Contractor in writing, stating the reasons. If either party disputes the Engineer, or his designee's determination or recommendation, that party may proceed as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Engineer, or his designee. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 ALLOWANCES

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- .1 Allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- .3 Whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2. The unused balance of any allowance shall be deducted from the Contract Sum upon completion and acceptance of the Work by Change Order.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 SUPERINTENDENT

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Engineer, or his designee the name and qualifications of a proposed superintendent. The Engineer, or his designee may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Engineer, or his designee has reasonable objection to the proposed superintendent or (2) that the Engineer, or his designee requires additional time to review. Failure of the Engineer, or his designee to reply within the 14 day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Engineer, or his designee has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 CONTRACTOR'S CONSTRUCTION SCHEDULES

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Engineer, or his designee's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

§ 3.10.2 The Contractor shall prepare a submittal schedule, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for the Engineer, or his designee's approval. The Engineer, or his designee's approval shall not unreasonably be delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Engineer, or his designee reasonable time to review submittals. If the Contractor fails to submit a submittal

schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Engineer, or his designee .

§3.10.4 Should the Contractor responsible for the scheduling requirements of Article 3 herein fail to comply with said scheduling requirements, said failure shall result in the following:

- 1 all claims resulting from the Contractor's failure to prepare or submit a schedule shall be the Contractor's responsibility;
- 2 shall constitute an act of default and a substantial breach of the Contract giving the Owner remedies under the Contract Documents; and
- 3 the Owner shall have the right to withhold any payments until the Contractor complies with the scheduling requirements of Article 3 herein.

§3.10.5 In the event of a Five Prime Contract, the General Contractor shall be responsible for the preparation and submittal of the schedule.

§ 3.11 DOCUMENTS AND SAMPLES AT THE SITE

The Contractor shall maintain at the site for the Owner one copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and one copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Engineer, or his designee and shall be delivered to the Engineer, or his designee for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. Their purpose is to demonstrate the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Engineer, or his designee is subject to the limitations of Section 4.2.7. Informational submittals upon which the Engineer, or his designee is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Engineer, or his designee without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve and submit to the Engineer, or his designee Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents in accordance with the submittal schedule approved by the Engineer, or his designee or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents to the Owner and Engineer, or his designee that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Engineer, or his designee .

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Engineer or his designee 's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Engineer, or his designee in writing of such deviation at the time of submittal and (1) the Engineer, or his designee has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Engineer, or his designee 's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Engineer, or his designee on previous submittals. In the absence of such written notice, the Engineer, or his designee 's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of Engineer, or his designee ure or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Engineer, or his designee will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Engineer or his designee . The Owner and the Engineer, or his designee shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications and approvals performed or provided by such design professionals, provided the Owner and Engineer, or his designee have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Engineer, or his designee will review, approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance and design criteria specified in the Contract Documents.

§ 3.13 USE OF SITE

§ 3.13.1 The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.13.2 The Contractor shall coordinate the Contractor's operations with, and secure the approval of, the Owner before using any portion of the Site.

§ 3.13.3 The Contractor shall store its apparatuses, materials, supplies, and equipment in such orderly fashion at the Site of the Work, if permitted, as will not unduly interfere with the progress of the Work or ongoing operations. The Contractor shall provide protective fencing around the designated storage areas.

§ 3.13.4 The Contractor shall see that stockpiles of materials and storage of equipment are kept to a minimum and neatly stored where directed by the Owner and the Engineer, or his designee .

§ 3.13.5 If the Work is to be executed in areas occupied by the Owner, the Contractor shall inform the Owner in advance of the areas scheduled to be worked on, so that the Owner's personnel may make proper preparations to protect equipment and records.

§3.13.6 The Contractor understands that some or all the Work of the Contract may be performed while the facilities are occupied by personnel, and accordingly shall make all reasonable and necessary provisions to ensure that the contract Work will be of minimal disruption to the environment.

§3.13.7 Materials and equipment that are to be used only directly in the Work, shall be brought to and stored on the Project site by the Contractor. After equipment is no longer required for the Work, it shall be promptly removed from the Project Site. Protection of construction materials and equipment stored at the Project Site from weather, theft, damage and all other adversity is solely the Contractor's responsibility. The Contractor shall bear the responsibility to replace all such materials that may be lost, damaged, or stolen at its expense, whether such materials or equipment have been entirely or partially paid for by the Owner.

§3.13.8 The Contractor and any entity for whom the Contractor is responsibility, shall not erect any sign on the Project Site without the prior written consent of the Owner, which may be withheld in the sole discretion of the Owner.

§3.13.9 Contractor shall ensure that the Work is performed at all times in a manner that affords reasonable access, both vehicular and pedestrian, to the Site of the Work and all adjacent areas. The Work shall be performed, to the fullest extent reasonably possible, in such a manner that public areas adjacent to the Site of the Work shall be free from all debris, building materials, and equipment likely to cause hazardous conditions.

§3.13.10 Without prior approval of the Owner, the Contractor shall not permit any workers to use any existing facilities at the Project Site, including, without limitation, the lavatories, toilets, entrances, and parking areas, other than those designated by the Owner. Without limitation of any other provision of the Contract Documents, the Contractor shall use its best efforts to comply with all rules and regulations promulgated by the Owner in connection with the use and occupancy of the Project Site and the Building, as amended from time to time. The Contractor shall immediately notify the Owner in writing, if during the performance of the Work, the Contractor finds compliance with any portion of such rules and regulations to be impracticable. This notification shall set forth the problems of such compliance and shall suggest alternatives through which the same results intended by such portions of the rules and regulations can be achieved. The Owner may, in the Owner's sole discretion, adopt such suggestions, develop new alternatives or require compliance with the existing requirements of the rules and regulations. The Contractor shall also comply with all insurance requirements and collective bargaining agreements applicable to use and occupancy of the Project Site and the Building.

§ 3.14 CUTTING AND PATCHING

§ 3.14.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting and patching shall be restored to the condition existing prior to the cutting, fitting and patching, unless otherwise required by the Contract Documents. Any costs incurred by the Onwer for defective cutting or patching shall be borne by the Contractor responsible therefore.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or separate contractors by cutting, patching or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter such construction by the Owner or a separate Contractor except with written consent of the Owner and of such separate Contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate Contractor the Contractor's consent to cutting or otherwise altering the Work.

§ 3.15 CLEANING UP

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and Owner shall be entitled to reimbursement from the Contractor, or shall be entitled to reduce the Contract Amount in an amount equal to the Owner's cost to clean up.

§3.15.3 The Contractor shall, on a daily basis, clean debris resulting from its Work, and protect construction in progress and maintain adjoining materials in place during handling and installation, and provide protective covering where required to assure protection from damage or deterioration until Substantial Completion.

§3.15.4 The Contractor shall clean and provide maintenance on completed construction, after installation, as frequently as necessary through the remainder of the construction period.

§3.15.5 The Contractor shall supervise its construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period. The term "clean" shall include the removal of debris from the work area to dumpsters furnished by the Prime General Work Contractor or the Contractor for Single Overall Contract Work, whichever contracting method shall apply.

§ 3.16 ACCESS TO WORK

The Contractor shall provide the Owner and Engineer, or his designee access to the Work in preparation and progress wherever located.

§ 3.17 ROYALTIES, PATENTS AND COPYRIGHTS

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Engineer, or his designee harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications or other documents prepared by the Owner or Engineer, or his designee. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Engineer, or his designee.

§ 3.18 INDEMNIFICATION

§ 3.18.1 The County of Union requires all bidders to accept the following indemnification requirements in the event the County accepts their bid. The Contract awarded by the County to the successful bidder will contain the following provision:

"To the fullest extent permitted by law the Contractor shall indemnify and hold harmless the Owner and Owner's consultants, agents, representatives, and employees from and against any and all claims, damages, losses, costs, and expenses, including, but not limited to attorney's fees, legal costs and legal expenses arising out of or resulting from the performance of the Contractor's work under this contract, provided that such claim, damage, loss, cost or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than work itself) caused or alleged to be caused by the negligent acts, negligent omissions, and/or fault of the Contractor, anyone directly or indirectly employed or retained by the Contractor, or anyone for whose acts the Contractor may be liable regardless of whether caused in part by the negligent act or omission of a party indemnified hereunder provided it is not caused by the sole negligence of a party indemnified hereunder. Contractor shall further indemnify and hold harmless the Owner and the Owner's consultants, agents, representative, and employees from and against any and all claims, damages, losses, costs, and expenses, including, but not limited to attorneys' fees, legal costs and legal expenses, arising out of or resulting from performance of the work, provided that such claims, damage, loss, cost, or expense is attributable to bodily injury, sickness, disease or death, or to injury to destruction of tangible property (other than work itself) caused or alleged to be caused by the negligent acts, negligent omissions, and/or fault of the Owner or the Owner's consultants, agents, representatives, or employees and arises out of this project and provided such claim, damage, loss, cost, or expense is not caused by the sole negligence of a party indemnified hereunder."

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

ARTICLE 4 ENGINEER, OR HIS DESIGNEE OR ENGINEER

§ 4.1 GENERAL

§ 4.1.1 The Owner shall retain an Engineer, or his designee lawfully licensed to practice Engineer, or his designee in the jurisdiction where the Project is located. That person or entity is identified as the Engineer, or his designee in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 4.1.2 Duties, responsibilities and limitations of authority of the Engineer, or his designee as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner, Contractor and Engineer, or his designee. Consent shall not be unreasonably withheld.

§ 4.2 ADMINISTRATION OF THE CONTRACT

§ 4.2.1 The Engineer, or his designee will provide administration of the Contract as set forth in its respective Agreements with the Owner and as described in the Contract Documents.

§ 4.2.2 The Engineer, or his designee will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents.

§ 4.2.3 On the basis of the site visits, the Engineer, or his designee will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and report to the Owner (1) known deviations from the Contract Documents and from the most recent construction schedule submitted by the Contractor, and (2) defects and deficiencies observed in the Work.

§ 4.2.4 COMMUNICATIONS FACILITATING CONTRACT ADMINISTRATION

Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Engineer, or his designee about matters arising out of or relating to the Contract. Communications by and with the Engineer, or his designee's consultants shall be through the Engineer, or his designee. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

§ 4.2.5 Based on the Engineer, or his designee's evaluations of the Contractor's Applications for Payment, the Engineer, or his designee will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Engineer, or his designee has authority to reject Work that does not conform to the Contract Documents. Whenever the Engineer, or his designee considers it necessary or advisable, the Engineer, or his designee will have authority to require inspection or testing of the Work in accordance with Sections 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Engineer, or his designee nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Engineer, or his designee to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Engineer, or his designee will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Engineer, or his designee's action will be taken in accordance with the submittal schedule approved by the Engineer, or his designee or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Engineer, or his designee's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Engineer, or his designee's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5 and 3.12. The Engineer, or his designee's review shall not constitute

approval of safety precautions or, unless otherwise specifically stated by the Engineer, or his designee, of any construction means, methods, techniques, sequences or procedures. The Engineer, or his designee's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Engineer, or his designee will prepare Change Orders and Construction Change Directives, and may authorize minor changes in the Work as provided in Section 7. The Engineer, or his designee will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Engineer, or his designee will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Engineer, or his designee agree, the Engineer, or his designee will provide one or more project representatives to assist in carrying out the Engineer, or his designee's responsibilities at the site. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in the Owner's Agreement with the Engineer, or his designee.

§ 4.2.11 The Engineer, or his designee will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Engineer, or his designee's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Engineer, or his designee will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Engineer, or his designee will endeavor to secure faithful performance by both Owner and Contractor and will not show partiality.

§ 4.2.13 The Engineer, or his designee will review and respond to requests for information about the Contract Documents. The Engineer, or his designee's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Engineer, or his designee will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 DEFINITIONS

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate Contractor or subcontractors of a separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

§ 5.2.1 Identification of Subcontractors required by N.J.S.A. 40A:11-16 shall be provided with the bid submission in accordance with the requirements of that statute. Names of persons or entities for any Subcontractor not covered by N.J.S.A. 18A-18 shall be furnished within thirty (30) thirty days of notification of Award of Contract. The Engineer, or his designee will notify the Contractor in writing if the Owner or Engineer, or his designee, after due investigation, has reasonable objection to any such proposed person or entity. The list of proposed Subcontractors shall include a description of the materials and equipment each proposes to furnish and install in the Work. The description shall be insufficient detail to allow the Engineer, or his designee to determine general conformance to Contract requirements. Approval of the submittals as required under this Article shall not relieve the Contractor from conformance to Contract requirements.

§5.2.2 Subcontractors shall comply with the statutory requirements of N.J.S.A. 34:11-56.25 and N.J.S.A. 34:11-56.48. Any subcontractors who fail to comply with those statutory provisions shall be rejected.

§5.2.3 Written confirmation of award of each major subcontract shall be submitted to the Owner by the Contractor, in form subject to his approval, within seven (7) days after receipt of Owner's approval of proposed Subcontractor list as provided under this Article. Every subcontract shall be in writing, shall be submitted to Owner for review and approval prior to execution, and shall specifically provide that the Owner is an intended third (3rd) party beneficiary of such subcontract.

§ 5.2.4 The Contractor shall not contract with a proposed person or entity to whom the Owner or Engineer, or his designee has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.5 If the Owner or Engineer, or his designee has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Engineer, or his designee has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.6 The Contractor shall not substitute a Subcontractor, person or entity previously selected if the Owner or Engineer, or his designee makes reasonable objection to such substitution.

§ 5.3 SUBCONTRACTUAL RELATIONS

§5.3.1 By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, which the Contractor, by these Documents, assumes toward the Owner and Engineer, or his designee. Each subcontract agreement shall preserve and protect the rights of the Owner and Engineer, or his designee under the Contract Documents and at law. No Subcontract shall diminish in any way any rights or benefits conferred upon the Owner by these Contract Documents. The Contractor shall make all Contract Documents available to the Subcontractors.

§5.3.2 Where the Contractor sublets portions of the Work, the entire responsibility for the subdividing of Work rests with the Contractor. The Owner and the Engineer, or his designee are not responsible for the manner of the subdivision of the Work, nor will they enter into or settle disagreements or disputes between Contractor and Subcontractors. The Contractor is, and will be held, responsible for the proper execution of the Work of all Subcontractors.

§ 5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

- 1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor in writing.

§ 5.4.2 Upon such assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor Contractor or other entity.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

§ 6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site.

§ 6.1.2 The Owner shall provide for coordination of the activities of the Owner's own forces and of each separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to the construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors and the Owner until subsequently revised.

§ 6.2 MUTUAL RESPONSIBILITY

§ 6.2.1 The Contractor shall afford the Owner and separate contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Engineer, or his designee apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acknowledgment that the Owner's or separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or separate contractors as provided in Section 10.2.5.

§ 6.2.4.1 Should the Contractor cause damage to the Work or property of any separate Contractor on the Project, the Contractor shall promptly settle with such other Contractor by agreement, or otherwise resolve the dispute. If such separate Contractor institutes any legal proceeding against the Owner on account of any damage alleged to have been so sustained, the Contractor shall, indemnify, defend, or bear the cost of defense as the Owner shall in its own discretion determine, and hold the Owner's harmless. Said Indemnification shall be governed by Section 13, Page G7 of the Instructions to Bidders.

§ 6.2.5 The Owner and each separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 OWNER'S RIGHT TO CLEAN UP

If a dispute arises among the Contractor, separate contractors and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Engineer, or his designee will allocate the cost among those responsible, which amounts the Owner shall be entitled to reduce the Contract Amounts of the various contracts of those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 GENERAL

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents. Change Orders and Construction Change Directives shall be subject to and processed in accordance with N.J.A.C. 6A:23-7 and N.J.A.C. 6A:26-4.9, where applicable.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor and Engineer, or his designee; a Construction Change Directive requires a written agreement by the Owner and Engineer, or his designee and may or may not be agreed to by the Contractor; an order for a minor change in the Work which does not extend the Contract Time, increase the Contract Sum or change the Project Scope may be issued by the Engineer, or his designee alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive or order for a minor change in the Work.

§ 7.1.4 In order to facilitate checking of quotations for extras or credits, all proposals shall be accompanied by a complete itemization of costs including labor, materials and subcontracts. Labor and materials shall be itemized in the manner prescribed above. Where major cost items are subcontracts, they shall be itemized also. In no case will a change be approved without such itemization.

§ 7.2 CHANGE ORDERS

§ 7.2.1 A Change Order is a written instrument prepared by the Engineer, or his designee and signed by the Owner, Contractor and Engineer, or his designee stating their agreement upon all of the following:

- .1 The change in the Work;
- .2 The amount of the adjustment, if any, in the Contract Sum; and
- .3 The extent of the adjustment, if any, in the Contract Time.

A Change Order shall not require consent of the Owner if the Owner has provided an allowance for such a change.

§ 7.2.2 Methods used in determining adjustments to the Contract Sum shall be those listed in Section 7.3.3.

§ 7.2.3 Agreement on any Change Order shall constitute a final settlement of all matters relating to the change in the Work that is the subject of the Change Order, including, but not limited to, all direct and indirect costs associated with such change, and any and all adjustments to the Contract Sum and the construction schedule. In the event a Change Order increases the Contract Sum, Contractor shall include the Work covered by such Change Orders in Applications for Payment as if such Work were originally part of the Contract Documents.

§ 7.3 CONSTRUCTION CHANGE DIRECTIVES

§ 7.3.1 A Construction Change Directive is a written order prepared by the Engineer, or his designee and signed by the Owner and Engineer, or his designee, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. A Construction Change Directive shall not require the Agreement of the Engineer, or his designee if the Owner specifically waives their consent in writing. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 As provided in Section 7.3.6.

§ 7.3.4 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Engineer, or his designee of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time. The Contractor's failure to comply with a Construction Change Directive shall constitute an incident of default and cause for termination by the Owner.

§ 7.3.5 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.6 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Engineer, or his designee shall determine the method and the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Engineer, or his designee may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.6 shall be limited to the following:

- .1 Costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;
- .2 Costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;
- .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others; and
- .4 Costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work.

§ 7.3.7 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Engineer, or his designee. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.8 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Engineer, or his designee will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Engineer, or his designee determines, in the Engineer, or his designee's professional judgment, to be reasonably justified. The Engineer, or his designee's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.9 When the Owner and Contractor agree with a determination made by the Engineer, or his designee concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Engineer, or his designee will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.3.10 In subparagraphs 7.3.3 and 7.3.6, the allowance for overhead and profit combined shall be based upon the following schedule:

- .1 For the Contractor, for work performed by his own forces, 10% of cost.
- .2 For each Subcontractor, for the work performed by his own forces, 10% of cost.
- .3 For the Contractor, for work performed by a subcontractor, 5% of cost.

§ 7.3.11 Lump sum quotations for changes in the Work will not be accepted. Proposals shall be completely itemized and broken down. They shall be accompanied by such supporting data as the Engineer, or his designee may require, such as copies of subcontractor's or vendor's quotations, quantity take-off sheets, or other similar information.

§ 7.4 MINOR CHANGES IN THE WORK

The Engineer, or his designee has authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes will be effected by written order signed by the Engineer, or his designee and shall be binding on the Owner and Contractor. The Contractor shall carry out such written orders promptly.

ARTICLE 8 TIME

§ 8.1 DEFINITIONS

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work and services as required by the Contract

Documents, Substantial Completion of the Work shall be accomplished within the period of consecutive calendar days (or by the date), as stated in the Agreement, plus any authorized extension(s) of time as approved by written agreement. Final Completion of the Work shall be no later than thirty (30) consecutive calendar days from the date of Substantial Completion of the Work, unless otherwise set forth in Article 3.2 of the Owner/Contractor Agreement.

§ 8.1.2 Intentionally omitted

§ 8.1.3 Intentionally omitted.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 PROGRESS AND COMPLETION

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the Contractor confirms that the Contract Time is a reasonable period for performing the Work. There will be no bonus or incentives paid, should the Work, or any portion thereof, be completed in advance of the specified activity milestone dates.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 DELAYS AND EXTENSIONS OF TIME

§ 8.3.1 Intentionally omitted

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 Intentionally omitted

§ 8.3.4 No payment, compensation, or adjustment of any kind shall be made to the Contractor by the Owner for damages resulting from hindrances or delays caused by the delays of other contractors, or from foreseeable circumstances not attributable to the Owner's conduct. The Contractor agrees that it will make no claim against the Owner for payment, compensation, damages, mitigation of Liquidated Damages, or adjustment of any kind for such hindrances or delays, and will accept such extensions of time as may be granted by the Owner in the Owner's sole discretion in full satisfaction for any and all alleged claims against the Owner for any and all such hindrances or delays. For purposes of this Agreement, disputes arising between contractors before or during construction, adverse weather conditions, and delays on the part of local authorities issuing permits shall be considered foreseeable circumstances. Notwithstanding the foregoing, nothing herein shall limit the Contractor's remedies for Owner's negligence, bad faith, active interference, tortious conduct, or other reasons unanticipated by the parties that delay expenditures paid by the Owner to the Engineer, or his designee, other individual or entity, or to any inspector or inspectors necessarily employed by it on the Work, for any number of days in excess of the Contract Time, shall be deducted for the Contract Sum.

§ 8.3.5 The provisions of this Article shall not be so interpreted or construed as to preclude or prevent the Contractor from making and prosecuting any claim against any separate Contractor engaged or employed by the Owner for damages alleged to have been caused or occasioned by any such separate Contractor.

§ 8.3.6 To the extent permitted by law, the Owner may suspend the whole or any part of the Work, if it shall deem it for the best interest of the Owner to do so, without compensation to the Contractor for such suspension, other than extending the time for completion of the Work as much as it may have been delayed by such suspension. During such suspension, all materials delivered upon, but not placed in the Work shall be neatly piled by the Contractor so as not to obstruct public travel, or shall be removed from the line of Work at the direction of the Owner and, unless the

materials be moved by the Contractor upon such direction, the materials shall be removed by the Owner and expense thereof will be charged to the Contractor.

§8.4.1 Should the Contractor fail to complete fully, and in conformity with all provisions of the Contract within the Contract Time, the Contractor shall, and hereby agrees to, pay the Owner one thousand dollars (\$1,000.00) per day, for each consecutive calendar day beyond the number of days allowed by the Contract, which sum is agreed upon as reasonable and proper measure of damages that the Owner will sustain per diem by failure of Contractor to complete Work within time as stipulated; it being recognized by Owner and Contractor that the injury to Owner that could result from a failure of the Contractor to complete on schedule, is uncertain and cannot be computed exactly. In no way shall costs of Liquidated Damages be construed as a penalty to the Contractor.

§8.4.2 It is expressly understood and agreed by and between the Contractor and Owner that the Contract Time prescribed herein is a reasonable time for the completion of the Work.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 CONTRACT SUM

The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.2 SCHEDULE OF VALUES

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit to the Engineer, or his designee, before the first Application for Payment, a schedule of values allocating the entire Contract Sum to the various portions of the Work and prepared in such form and supported by such data to substantiate its accuracy as the Engineer, or his designee may require. This schedule, unless objected to by the Engineer, or his designee, shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 9.3 APPLICATIONS FOR PAYMENT

§ 9.3.1 See Article 5 of Standard Form of Agreement between Owner/Contractor.

§ 9.3.1.1 Applications for Payment may include requests for payment on account of changes in the Work which have been properly authorized by Construction Change Directives but not yet included in Change Orders.

§ 9.3.1.2 Such applications may not include requests for payment of amounts the Contractor does not intend to pay to a Subcontractor or material supplier because of a dispute or other reason.

§ 9.3.1.3 All applications for payment shall be accompanied by the Application and Certificate of Payment, AIA Document G702, and the Continuation Sheet, AIA Document G703, fully completed as required or such other application for Payment as the Owner's representative shall use.

§9.3.1.4 In cases where the work is awarded on a Single Overall Contract basis, payments shall be made in accordance with applicable State of New Jersey statutes.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

§9.3.3.1 All municipal mechanic's liens filed by a lien claimant shall be governed by N.J.S.A. 2A:44-125 et seq. In the event a municipal mechanic's lien is filed, the Owner reserves the right to withhold the full amount of the lien. The Owner may release the funds to the party against whose account the lien is claimed, only after that party files with the Owner's financial officer, a bond in an amount double of all sums claimed ("Double Bond") under the lien, and such bond's form has been approved by the Owner's chief law officer and financial officer, per N.J.S.A. 2A:44-130 or if an acceptable release of liens is filed by the lien claimant.

§ 9.4 CERTIFICATES FOR PAYMENT

§ 9.4.1 See Article 5 of Standard Form of Agreement between Owner and Contractor.

§ 9.4.2 See Article 5 of Standard Form of Agreement between Owner and Contractor

§9.4.3 See Article 5 of Standard Form of Agreement between Owner and Contractor.

§ 9.5 DECISIONS TO WITHHOLD CERTIFICATION

§ 9.5.1 See Article 5 of Standard Form of Agreement between Owner and Contractor

§ 9.5.2 See Article 5 if Standard Form of Agreement between Owner and Contractor.

§ 9.6 PROGRESS PAYMENTS

§ 9.6.1 After the Engineer, or his designee has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Engineer, or his designee .

§ 9.6.2 The Contractor shall promptly pay each Subcontractor, upon receipt of payment from the Owner, out of the amount paid to the Contractor on account of such Subcontractor's portion of the Work, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work and shall certify same to Owner. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Engineer, or his designee will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Owner and Engineer, or his designee on account of portions of the Work done by such Subcontractor.

§ 9.6.4 Neither the Owner nor Engineer, or his designee shall have an obligation to pay or to see to the payment of money to a Subcontractor except as may otherwise be required by law.

§ 9.6.5 Payment to material and equipment suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.7 FAILURE OF PAYMENT

If the Engineer, or his designee does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents the amount certified by the Engineer, or his designee or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' written notice to the Owner and Engineer, or his designee , stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, plus interest as provided for in the Contract Documents.

§9.7 REIMBURSEMENT TO OWNER

§9.7.1 If the Owner is entitled to any reimbursement or payment from the Contractor under, or pursuant to, the Contract Documents, such payment shall be made promptly upon demand by the Owner. Notwithstanding anything contained in the Contract Documents to the contrary, if the Contractor fails to promptly make any payment due the Owner, or the Owner incurs any costs and expenses to cure any default of the Contractor or to correct defective Work, the Owner shall have an absolute right to offset such amount against the Contract Sum and may, in the Owner's sole discretion, elect either to: (1) deduct an amount equal to that which the Owner is entitled from any

payment then, or thereafter, due the Contractor from the Owner; or (2) issue a written notice to the Contractor reducing the Contract Sum by an amount equal to that which the Owner is entitled.

§ 9.8 SUBSTANTIAL COMPLETION

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use; provided, however, that a condition precedent to Substantial Completion shall be the Owner's receipt of all certificates of occupancy (permanent or temporary) and any other permits, approvals, licenses, and other documents from any governmental authority having jurisdiction thereof necessary for the occupancy of the Project. The Owner may withhold a certification of Substantial Completion if temporary installations or temporary construction exists in areas requesting certification, or if certificates of occupancy are temporary or conditional.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Engineer, or his designee shall prepare a comprehensive list of items to be completed or corrected ("Punch List"). The Contractor shall proceed immediately and correct items on the list. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Upon receipt of the list, the Engineer, or his designee, will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Engineer, or his designee's inspection discloses any item, whether or not included on the list, which is not in accordance with the requirements of the Contract Documents, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Engineer, or his designee. The Contractor shall then submit a request for another inspection by the Engineer, or his designee to determine Substantial Completion. When the Work or designated portion thereof is substantially complete, the Engineer, or his designee will prepare a Certificate of Substantial Completion which shall establish the date of Substantial Completion, shall establish responsibilities of the Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the List accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion. The Certificate of Substantial Completion shall be submitted to the Contractor for its written acceptance and to the Owner for its approval and acceptance as required by Section 9.8.1. No Certificate of Substantial Completion shall be deemed effective unless executed by both Owner and Contractor.

§ 9.9 PARTIAL OCCUPANCY OR USE

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, who shall obtain all necessary modifications to its insurance coverage to permit such occupancy or use. In addition, Contractor shall obtain consent of those public authorities having jurisdiction over the Work. Such partial occupancy or use may commence whether or not the portion is substantially complete pursuant to the terms of that Agreement. When the Contractor considers a portion substantially complete, the Engineer, or his designee shall prepare a Punch List as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor and Engineer, or his designee shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.9.4 The occupancy of any portion of the Work shall not constitute acceptance of any Work, except as hereinafter stated, nor does it waive the Owner's right to Liquidated Damages. Final Acceptance of the Work shall be for the whole Work only and not part.

§ 9.9.5 Occupancy by the Owner shall not be deemed to constitute a waiver of existing claims on behalf of the Owner or Contractor against each other.

§ 9.10 FINAL COMPLETION AND FINAL PAYMENT

§ 9.10.1 Upon completion of the Work, the Contractor shall forward to the Engineer, or his designee a written notice that the Work is ready for final inspection and acceptance and shall also forward to the Engineer, or his designee a final Contractor's Application for Payment. The Engineer, or his designee will promptly make such inspection. When the Engineer, or his designee finds the Work acceptable under the Contract Documents and the Contract fully performed, the Engineer, or his designee will promptly issue a final Certificate for Payment stating that to the best of their knowledge, information and belief, and on the basis of their observations and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Engineer, or his designee's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor complies with all requirements set forth in Section 6 of the Standard Form of Agreement between Owner and Contractor and the Contractor submits to the Engineer, or his designee (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment and (5), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

§ 9.10.3 Intentionally omitted

§ 9.10.4 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 SAFETY PRECAUTIONS AND PROGRAMS

The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract. The Contractor shall submit the Contractor's safety program to the Engineer, or his designee for review and coordination with the safety programs of other Contractors.

§ 10.2 SAFETY OF PERSONS AND PROPERTY

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to

- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors; and
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.
- .4 Construction or operations by the Owner or other Contractors.

§ 10.2.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury or loss.

§ 10.2.3 The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying Owners and users of adjacent sites and utilities.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2, 10.2.1.3 and 10.2.1.4 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2, 10.2.1.3 and 10.2.1.4, except damage or loss attributable to acts or omissions of the Owner or Engineer, or his designee or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Engineer, or his designee.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 INJURY OR DAMAGE TO PERSON OR PROPERTY

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 HAZARDOUS MATERIALS

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner and Engineer, or his designee in writing.

§ 10.3.2 Upon receipt of the Contractor's written notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Engineer, or his designee the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of such material or substance or who are to perform the task of removal or safe containment of such material or substance.

§ 10.3.3 Intentionally omitted

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall indemnify the Owner for the cost and expense the Owner incurs (1) for remediation of a material or substance the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 Intentionally omitted

§ 10.4 EMERGENCIES

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 CONTRACTOR'S LIABILITY INSURANCE

§ 11.1.1 The County of Union requires all bidders to be able to comply with the following insurance requirements. In the event a bid is accepted by the County, the bidder must accept the applicable insurance requirements, as set forth below, as part of any contract, awarded to it by the County.

1. Automobile Liability Insurance in any amount of not less than \$1,000,000.00 combined single limits for Bodily Injury and Property Damage Liability. A certificate of such current insurance will be provided to the County and will reflect the provision of at least thirty (30) days notice to the County before any major cancellation or major change may be made the policy.

2. Workers Compensation Insurance insuring the obligations of the Contractor and all Subcontractors under the New Jersey Workers Compensation and Occupational Disability Laws as respects to Work performed under the Contract. Insurance will be extended to include any obligations under the United States Longshoremen's and Harbor Workers Act or any maritime act, when applicable.

3. General Liability Insurance will be provided on a Comprehensive General Liability form with a combined single limit of \$3,000,000.00 per occurrence for Bodily Injury Liability and Property Damage Liability and will include the interest of the County with respect to Work emanating from the Contract with the County. The insurance will include the following:

- a) Personal Injury Liability
- b) Blanket Contractual Liability applies to assumption of liability under any written Contract
- c) Coverage for A, X, C, U exposures, relating to excavation, blasting underground damage
- d) Broad Form Property Damage Liability
- e) Products and/or Completed Operations Liability

A Certificate of Insurance will be filed with the County prior to commencement of any Work. This certificate will contain a provision that insurance afforded under the policies will not be canceled without at least (30) days prior written notice being given to the County.

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§ 11.1.2 The insurance required by Section 11.1.1 shall remain in effect for the duration of the project, i.e., from beginning of construction until final payment and closeout.

§ 11.1.3 All insurance required by Section 11.1.1 shall be issued by insurance companies authorized to do business in the State of New Jersey and rated as "A" or better as determined by A.M. Best Company.

§ 11.1.4 The Contractor waives all rights against the Owner for damages caused by fire or other perils to the extent covered by insurance provided under this Article. Any deductibles, co-insurance, or contribution to the loss will be borne solely by the Contractor.

§ 11.1.5 A certificate of insurance evidencing the coverages required by Section 11.1.1 shall be submitted to the Owner's attorney for approval and transmittal to the Owner and Engineer, or his designee prior to the commencement of the Work. The certificate must be submitted on the ACORD form Certificate of Insurance. These certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least thirty (30) days written notice has been given to the Owner. If requested by the Owner, the Contractor shall provide complete copies of any policies of insurance required by this Contract to be obtained by the Contractor and Subcontractor(s). Information concerning any reduction of coverage shall be furnished by the Contractor with reasonable promptness in accordance with the Contractor's information and belief.

§ 11.2 PROPERTY INSURANCE

§ 11.2.1 Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance in the amount of the initial Contract Sum as well as subsequent modifications thereto for the entire Work at the site on a replacement cost

basis without voluntary deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurance interest in the property required by this Section 11.2 to be covered, whichever is earlier. This insurance shall include the interest of the Owner, Contractor, Subcontractor(s), and Sub-Contractor(s) in the Work.

§ 11.2.1.1 Property insurance shall be on an "all-risk" policy form and shall be against the perils of fire and extended coverage and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, falsework, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Engineer, or his designee's services and expenses required as a result of such insured loss. Coverage for all other perils shall not be required unless otherwise provided in the Contract Documents.

§ 11.2.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance which will protect the interests of the Contractor, Subcontractor(s) and Sub-subcontractor(s) in the Work. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor, then the Owner shall bear all reasonable costs properly attributable thereto.

§ 11.2.1.3 If the property insurance requires minimum deductibles, and such deductibles are identified in the Contract Documents, the Contractor shall pay costs not covered because of such deductibles. If the Owner or insurer increases the required minimum deductibles over the amounts so identified or if the Owner elects to purchase this insurance with voluntary deductible amounts, the Owner shall be responsible for payment of the additional costs not covered because of such increased or voluntary deductibles.

§ 11.2.1.4 Unless otherwise provided in the Contract documents, this property insurance shall cover portions of the Work stored off the site after written approval of the Owner at the value established in the approval, and also portions of the Work in transit.

§ 11.2.1.5 A loss insured under Owner's property insurance shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgage clause and of Section 11.3.10. The Contractor shall pay Subcontractor(s) their just shares of insurance proceeds received the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractor(s) to make payments to their Sub-Contractor(s) in a similar manner.

§ 11.2.2 BOILER AND MACHINERY INSURANCE

The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds. The Owner as fiduciary shall have the power to adjust and settle a loss with insurers.

§ 11.2.3 LOSS OF USE INSURANCE

The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused.

§ 11.2.4 If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

§ 11.3 PERFORMANCE BOND, PAYMENT BOND AND MAINTENANCE BOND

§ 11.3.1 Contractor, at its sole expense, shall furnish bonds covering faithful performance of the contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract, including material and labor..

§ 11.3.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be made

§ 11.3.3 The Contractor shall file with the Owner, as a condition of final acceptance, a statement from the Surety of its Performance Bond and Payment Bond, that the Surety is satisfied that all claims for labor and material supplied under its contract have been satisfactorily settled.

§ 11.3.4 As a condition of Substantial Completion of the Work, the Contractor shall provide an acceptable Maintenance Bond in accordance with section 16, page G-9 of the Instructions to Bidders.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 UNCOVERING OF WORK

§ 12.1.1 If a portion of the Work uncovered is contrary to the Engineer, or his designee's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Engineer, or his designee, be uncovered for the Engineer, or his designee's examination and be replaced at the Contractor's expense without change in the Contract Time or Contract Sum.

§ 12.1.2 If a portion of the Work has been covered that the Engineer, or his designee has not specifically requested to examine prior to its being covered, the Engineer, or his designee may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, such costs and the cost of correction shall be at the Contractor's expense unless the condition was caused by the Owner or a separate Contractor in which event the Owner shall be responsible for payment of such costs.

§ 12.2 CORRECTION OF WORK

The Contractor shall promptly correct Work rejected by the Engineer, or his designee or failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Engineer, or his designee's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of an applicable special warranty required by the Contract Documents any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. The Contractor shall give such notice promptly after discovery of the non-conforming work. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after the receipt of notice from the Owner or Engineer, or his designee, the Owner may correct it in accordance with Section 2.4. This obligation under Section 12.2.2 shall survive acceptance of the Work under the Contract and termination of the Contract.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 Intentionally omitted.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged work, whether completed or partially completed, of the Owner or separate contractors caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work, nor to any deficient Work discovered after the one-year period that could not have readily been discovered.

§ 12.3 ACCEPTANCE OF NONCONFORMING WORK

If the Owner prefers to accept Work, that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made. However, there shall be no implied or expressed acceptance of Work not in compliance with applicable law. The amount of said reduction will be within the exclusive determination of the Owner as its representative.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 GOVERNING LAW

§ 13.1.1 The Contract shall be governed by the laws of the State of New Jersey.

§ 13.1.2 Nothing in the Contract Documents shall be construed to permit deviation from the governing law.

§ 13.1.3 In accordance with N.J.S.A. 40A:11-18, American manufactured products or materials shall be used in the Work, wherever possible.

13.1.4 RATE OF WAGES

Where the Project is not subject to a Project Labor Agreement, wage notes shall be paid pursuant to the New Jersey Prevailing Wage Act, N.J.S.A. 34:11-56.25 et seq, the Contractor and Subcontractor are required to do the following:

§ 13.1.4.1 Pay to all workmen engaged in the performance of services, directly upon a public work, the prevailing rate of wages, which shall be those in effect for the Project site(s) on the Contract Date and such rates shall remain in effect for (2) years, unless superseded by a subsequent determination.

§ 13.1.4.2 Before final payment, furnish Owner with an affidavit stating that all workmen have been paid the prevailing rate of wages specified in the contract.

§ 13.1.4.3 Keep an accurate record showing the name, craft, or trade and actual hourly rate of wages paid to each workman employed by it in connection with any public work. Records shall be preserved for two (2) years from date of payment.

§ 13.1.4.4 Post the prevailing wage rated for each craft and classification involved as determined by the Commissioner of Labor and Industry, including the effective date of any changes thereof in prominent and easily accessible places at the site of the Work, and at such place or places as are used by them to pay workmen their wages.

§ 13.1.4.5 Submit the Owner, certified payroll records for each payroll period within ten (10) days of the date of the payment of wages. A certified payroll record is defined as "a payroll record that is attested by the employer or the Owner of the company doing business as the employer, or a corporate officer of such company, or an authorized agent of the employer". A copy of the certified payroll form for submission of the payroll records may be obtained by contacting the Department of Labor, Division of Workplace Standards at 609.292.2259.

§ 13.1.4.6 In the event the Owner finds that any workers employed by the Contractor or Subcontractor, covered by the said contract, have been paid a rate of wages less than the prevailing wage required to be paid by such contract, the Owner may terminate the Contractor's or Subcontractor's right to proceed with the Work, or such part of the

Work as to where there has been a failure to pay required wages, and to prosecute the Work to completion or otherwise, the Contractor and its sureties shall be liable to the Owner for any excess costs occasioned thereby,

§ 13.1.4.7 a current wage rate determination is on file at the offices of the Owner for inspection and Contractor's use.

§ 13.1.5 SAFETY AND HEALTH REGULATIONS (OSHA)

§ 13.1.5.1 The Contractor shall comply with the laws, rules, regulations and codes dealing with occupational safety and health, including, but not limited to, the latest amendments of the following:

§ 13.1.5.2 Williams – Steiger Occupational Safety and Health Act of 1970, Public Law 91-595.

§ 13.1.5.3 Part 1910 – Occupational Safety and Health Standards Chapter XVII of Title 29, Code of Federal Regulations.

§ 13.1.5.4 Part 126 – Safety and Health Regulations for Construction, Chapter XVII of Title 29, Code of Federal Regulations.

§ 13.1.5.3 N.J.A.C. 8:59-5.1-5.109 requirements properly label any substances stored in containers) of the Worker and Community Right to Know Act, P.L. 1983, c.315.

§ 13.1.6 ENVIRONMENTAL REGULATIONS

§ 13.1.6.1 The Contractor shall comply with laws, rules, regulations, and codes dealing with the prevention of environmental pollution and the preservation of public natural resources, including but not limited to, the latest amendments of the following:

§ 13.1.6.2 Chapter 251, public Law of 1975 of the State of New Jersey, "soil Erosion and Sediment Control Act."

§ 13.1.7 AFFIRMATION ACTION EMPLOYMENT LAW

Contractor agrees to comply with the terms of the Mandatory Equal Employment Opportunity Language, a copy of which is annexed to the Contract Documents as Exhibit F and incorporated as if set forth herein.

§ 13.1.7.1 Contractor shall submit a copy of the Monthly Project Workforce Report, New Jersey Department of Treasury Form AA-202, to the New Jersey Department of Treasury's Division of Public Contracts Equal Employment Opportunity Compliance and to the Owner

§ 13.1.7.2 Contractor shall complete and submit to the Owner an Initial Project Workforce Report, New Jersey Department of Treasury Form AA 201, upon notification of award and no later than the execution of this Agreement. Failure to submit this completed form may result in this Agreement being terminated.

§ 13.2. SUCCESSORS AND ASSIGNS

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to covenants, agreements and obligations contained in the Contract Documents, neither party to the Contract shall assign the Contract as a whole without written consent of the other, unless as may be provided for elsewhere in the Contract Documents. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.3 WRITTEN NOTICE

Written notice shall be deemed to have been duly served if delivered in person to the individual, to a member of the firm or entity, or to an officer of the corporation for which it was intended; or if delivered at or sent by registered or certified mail or by courier service providing proof of delivery to, the last business address known to the party giving notice.

§ 13.4 RIGHTS AND REMEDIES

§ 13.4.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights and remedies otherwise imposed or available by law.

§ 13.4.2 No action or failure to act by the Owner, Engineer, or his designee or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach there under, except as may be specifically agreed in writing.

§ 13.5 TESTS AND INSPECTIONS

§ 13.5.1 Tests, inspections and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Engineer, or his designee timely notice of when and where tests and inspections are to be made so that the Engineer, or his designee may be present for such procedures. The Owner shall bear costs of (1) tests, inspections or approvals that do not become requirements until after bids are received or negotiations concluded, and (2) tests, inspections or approvals where building codes or applicable laws or regulations prohibit the Owner from delegating their cost to the Contractor.

§ 13.5.2 If the Engineer, or his designee, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Section 13.5.1, the Engineer, or his designee will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Engineer, or his designee of when and where tests and inspections are to be made so that the Engineer, or his designee may be present for such procedures. Such costs, except as provided in Section 13.5.3, shall be at the Owner's expense.

§ 13.5.3 If such procedures for testing, inspection or approval under Sections 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure including those of repeated procedures and compensation for the Engineer, or his designee's services and expenses shall be at the Contractor's expense.

§ 13.5.4 Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Engineer, or his designee.

§ 13.5.5 If the Engineer, or his designee is to observe tests, inspections or approvals required by the Contract Documents, the Engineer, or his designee will do so promptly and, where practicable, at the normal place of testing.

§ 13.5.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.6 INTEREST

Except as required by Section 5.1.3 of the Owner Contractor Agreement and notwithstanding anything to the contrary contained in the Contract Documents and related documents, the Owner will pay no interest whatsoever for any payments due.

§ 13.7 TIME LIMITS ON CLAIMS

Intentionally deleted.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 TERMINATION BY THE CONTRACTOR

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, for any of the following reasons:

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2 An act of government, such as a declaration of national emergency that requires all Work to be stopped;

§ 14.1.2 Intentionally deleted

§ 14.1.3 If one of the reasons described in Section 14.1.1 exists, the Contractor may, upon thirty (30) days' written notice to the Owner and Engineer, or his designee, terminate the Contract

§ 14.1.4 Intentionally deleted.

§ 14.2 TERMINATION BY THE OWNER FOR CAUSE

§ 14.2.1 The Owner may terminate the Contract if the Contractor after Notice and an opportunity to cure.

- .1 refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
- .3 disregards laws, ordinances, rules or regulations, or orders of a public authority having jurisdiction;
- .4 fails to furnish the Owner with assurances satisfactory to the Owner, evidencing the Contractor's ability to complete the Work in compliance with all requirements of the Contract Documents;
- .5 fails after commencement of the Work, to proceed continuously with the construction and completion of the Work, for more than three (3) days, except as permitted by the Contract Documents;
- .6 disregards orders of the Owner or Engineer, or his designee;
- .7 fails to maintain the Site in a clean, safe and orderly manner;
- .8 fails to comply with a Construction Change Directive; or
- .9 otherwise is guilty of any breach of a provision of the Contract Documents.

§ 14.2.2 When any of the above reasons exist, the Owner, upon certification by the Initial Decision Maker that sufficient cause exists to justify such action, may without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. And charge the costs incurred against the Contractor's Contract balance

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished. The Engineer, or his designee's certification issued pursuant to Section 14.2.2 shall be given a presumption of correctness.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Engineer, or his designee's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Engineer, or his designee, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 SUSPENSION BY THE OWNER FOR CONVENIENCE

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 Intentionally deleted.

§ 14.4 TERMINATION BY THE OWNER FOR CONVENIENCE

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;

- 2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- 3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not executed.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 CLAIMS

§ 15.1.1 DEFINITION

A Claim is a demand or assertion by one of the parties seeking adjustment or interpretation of Contract terms, payment of money, extension of time, or other relief with respect to the terms of the Contract. Any Contractor Claim seeking the payment of money shall not include consequential damages, which Contractor hereby waives, and shall be calculated in accordance with Section 7.3.6 and Section 7.3.10 hereof.

§ 15.1.2 DECISION OF ENGINEER, OR HIS DESIGNEE

Owner and Contractor agree that the Engineer, or his designee shall be the initial arbiter of all Claims, including those alleging error or omission by the Engineer, or his designee. All claims, shall be referred, initially to the Engineer, or his designee for action as provided in Article 4 and shall be required as a condition precedent to litigation of a Claim between the Contractor and Owner to all such matters arising prior to the date final payment is due, regardless of: (1) whether such matters relate to execution and progress of the Work; or (2) the extent to which the work has been completed. The decision by the Engineer, or his designee in response to a Claim shall not be a condition precedent to litigation in the event: (1) the position of the Engineer, or his designee is vacant; (2) the Engineer, or his designee has not received evidence or has failed to render a decision within agreed time limits; (3) the Engineer, or his designee has failed to take action required under Article 4 within thirty (30) days after the Claim is made; (4) forty-five (45) days have passed after the Claim has been referred to the Engineer, or his designee; or, (5) the claim relates to a mechanic's lien.

§ 15.1.3 TIME LIMITS ON CLAIMS

Claims must be within twenty one (21) calendar days after the occurrence of the event giving rise to the Claim or within twenty-one (21) calendar days after the claimant first becomes aware of the condition giving rise to the Claim, whichever is later. There shall be no time limitation upon any Claims made by the Owner. Claims must be made by written notice to the Engineer, or his designee. An additional Claim made after the initial Claim has been implemented by Change Order will not be considered unless submitted pursuant to the requirements of this Paragraph. Notice shall be deemed effective upon the Engineer, or his designee's receipt of the Notice.

§ 15.1.4 CONTINUING CONTRACT PERFORMANCE

Pending final resolution of a Claim, unless otherwise agreed in writing, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments to the extent required by the Contract Documents.

§ 15.1.5 CLAIMS FOR CONCEALED OR UNKNOWN CONDITIONS

If conditions are encountered at the Site which are: (1) subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Contract Documents; or (2) unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for the Contract Documents, the Owner and Contractor mutually agree to give written notice to each other; including the Engineer, or his designee and any affected Contractor or subcontractor, upon the observation of the condition within twenty-four (24) hours of first observation of the condition. The Engineer, or his designee will investigate such conditions within seventy-two (72) hours and will diligently process and render a recommendation within twenty-one (21) days unless otherwise agreed in writing. If the Engineer, or his designee determines that the condition at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified the Engineer, or his designee shall so notify the Owner and Contractor in writing, stating the reasons. Claims by either party in

opposition to such determination must be made within seven (7) days after the Engineer, or his designee has given notice of the decision.

§ 15.1.6 CLAIMS FOR ADDITIONAL COST

If the Contractor wishes to make a Claim for an increase in the Contract Sum written notice as provided herein shall be given before proceeding to execute the Work. All documentation in support of the Contractor's request shall, likewise be provided at the time said written request is made. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.3 or elsewhere in the Contract Documents.

§ 15.2 CLAIMS FOR ADDITIONAL TIME

§ 15.2.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, written notice as provided herein shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work, , all documentation in support of the Contractor's request shall, likewise be provided at the time said written request is made. In the case of a continuing delay, only one Claim is necessary.

§ 15.2.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction. The term "abnormal" as used here shall be construed according to the following formula: average rainfall (or snow, low temperature, etc) for the past five (5) years for the month in question, plus ten percent (10%). Accordingly, weather is not deemed to be abnormal unless it is ten percent (10%) worse than the average for the month over the past five (5) years. Claims relating to weather must be submitted within seven (7) calendar days of the occurrence of any such delays.

§ 15.3 CLAIMS FOR INJURY OR DAMAGE TO PERSON OR PROPERTY. If either Party to the Contract suffers injury or damage to person or property because of an act or omission of the other party, of any of the other party's employees or agents, or of others for whose acts such party is legally liable, written notice of such injury or damage, whether or not insured, shall be given to the other party, including the Engineer, or his designee , within a reasonable time not exceeding twenty-one (21) days after first occurrence, unless another time period is required by law. The notice shall provide sufficient detail to enable the other party to investigate the matter. If a Claim for additional cost or time related to this Claim is to be asserted, it shall be filed as provided for in Article 15.

§ 15.3.2 The Owner is not required to institute a claim under this section in order to terminate this Agreement.

§ 15.4 RESOLUTION OF CLAIMS AND DISPUTES

The Engineer, or his designee will review Claims and take one or more of the following preliminary actions with ten (10) days of receipt of a Claim: (1) request additional supporting data from the claimant; (2) reject the Claim in whole or in part, stating reasons for rejection ; (3) recommend approval of the Claim by other party; or (4) suggest a compromise.

§ 15.4.2 If a Claim has been resolved, the Engineer, or his designee will prepare or obtain appropriate documentation in consultation with Owner's counsel as circumstances dictate.

§ 15.4.3 If a Claim has not been resolved after consideration of the foregoing and of further evidence presented by the parties or requested by the Engineer, or his designee , the Engineer, or his designee will notify the parties in writing that the Engineer, or his designee 's decision will be made within seven (7) days, which decision shall be final. Upon expiration of such time period, the Engineer, or his designee will render to the parties the Engineer, or his designee 's written decision relative to the Claim, including any change in the Contract Sum or Contract Time or both.

§ 15.5. CLAIMS FORUM

Unless otherwise required by Section 5.1.3 of the Standard Form of Agreement between the Owner and Contractor, claims, disputes, or other matters in question between the parties to this Contract arising out of or relating to the Project or to this Contract, or the alleges breach thereof, shall be subject in the first instance to mediation and failing that, there in, a Court of competent jurisdiction venued in Union County, New Jersey. The Owner may not be compelled to submit any dispute concerning the Project to arbitration. By accepting award of the Contract and executing the Agreement, the Contractor consents to its joinder as a party in any litigation, mediation, arbitration or any other legal proceeding involving the Project and any references in the Contract documents.

§ 16.1 INTERPRETATIONS IN WRITING

§ 16.1.1 Neither the price bid for the work of any Contract, nor the Contract Sum, shall be based in any manner upon oral opinions, or real or alleged instructions of an oral nature, regardless if whether such opinions or instructions are expressed by the Owner, the Engineer, or his designee or its Consultants, the Contractor, or agents or representative of any of them and no such oral communication shall form the basis of a Claim.

§ 16.1.2 These provisions do not intend to deny, on an oral basis, normal discussion, recommendations, explanations, suggestions, approvals, rejections, and similar activity in pursuit of the work of the Project, such as at job conferences and otherwise at the Site. In such instances, the written minutes, correspondence, shop drawing records, written field orders, and other written data shall govern over personal claims regarding statements made contrary to the written data.

§ 17.1 JOB SITE MEETINGS

§ 17.1.1 Job site meetings, when called by the Engineer, or his designee, shall be held at a location and time convenient to the Owner's representatives, the Engineer, or his designee, and Contractor(s). Each Contractor shall attend such meeting, or be represented by a person in authority who is thoroughly familiar with the Project and who can speak and make decisions for the Contractor. In the instance of a Single Overall Contract, each of the major Subcontractors-Structural Steel, and ornamental iron work, plumbing, gas fitting and all kindered work and steam power plants, steam, and hot water heating and ventilating apparatus and Electrical-shall have a person in authority who is thoroughly familiar with the Project attend the meetings.

§ 18.1 MANDATORY LAW AGAINST DISCRIMINATION LANGUAGE
PROCUREMENT, PROFESSIONAL AND SERVICE CONTRACTS
(N.J.A.C. 13:6-1.3)

§ 18.1.1 The parties of this contract do hereby agree that the provision of N.J.S.A. 10:2-1 through N.J.S.A. 10:2-4 dealing with discrimination in employment on public contracts, and the rules and regulations promulgated pursuant thereto, are hereby made a part of this contract and are binding upon them.

§ 18.1.1 Pursuant to the provision of N.J.S.A. 10:2-1 through N.J.S.A. 10:2-4, during the performance of this contract, the Contractor agrees as follows:

§ 18.2.1.1 In the hiring of persons for the performance of work under this contract or any subcontract hereunder, or for the procurement, manufacture, assembling or furnishing of any such materials, equipment, supplies or services to be acquired under this contract, no Contractor, including without limitation, the Contractor, nor any person acting on behalf of such Contractor or subcontractor, shall by reason of race, creed, color national origin, ancestry, Marital status, gender identity or expression, affectional or sexual orientation, or sex, discriminate against any person who is qualified and available to perform the Work, to which the employment relates;

§ 18.2.1.2 No Contractor, including, without limitation, the Contractor, Subcontractor, nor any person acting on its behalf shall, in any manner, discriminate against or intimidate any employee engaged in the performance of work under this Contract or any subcontract hereunder, or engaged in the procurement, manufacture, assembling or furnishing of any such materials, equipment, supplies or services to be acquired under such Contract, on account of race, creed, color, national origin, ancestry, marital status, gender identity or expression, affectional or sexual orientation, or sex;

§ 18.2.1.3 There may be deducted from the amount payable to the Contractor by the Owner, under the Contract, a penalty of \$50.00 (fifty dollars) for each person for each calendar day during which such person is discriminated against or intimidated in violation of the provisions of the Contract; and

§ 18.2.1.4 This contract may be canceled or terminated by the Owner, and all the money due or to become due hereunder may be forfeited, for any violation of this section of the Contract occurring after notice to the Contractor from the contracting public agency or any prior violation of this section of the Contract.

§ 19.1 CONTRACTOR AND SUBCONTRACTOR COLLECTION OF USE TAX TO LOCAL GOVERNMENTS

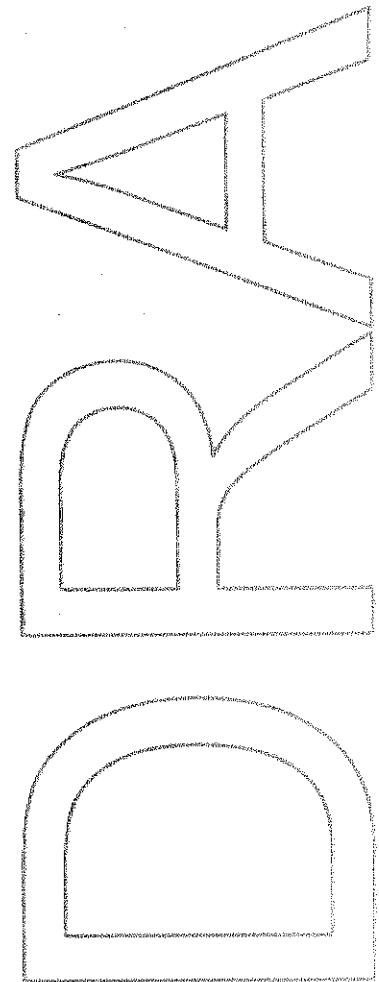
§ 19.1.1 The Contractor acknowledges and agrees that pursuant to P.L. 2004, c. 57, enacted by the State of New Jersey on June 29, 2004, contractors or contractors with subcontractors, or their affiliates, who enter into contracts

with New Jersey local government entities, including without limitation, boards of education, are, effective as of September 1, 2004, required to collect and remit to the New Jersey Director of Taxation in the Department of the Treasury the use tax pursuant to the "sales and Use Tax Act," P.L. 1966, c. 30 (C.54:32B-1 et. seq.) on all their sales of tangible personal property delivered into the State of New Jersey (hereinafter referred to as the "Contractor Use Tax Collection Legislation").

§ 19.2.1 The Contractor hereby covenants and agrees that the Contractor, any subcontractor and each of their affiliates, shall collect and remit to the New Jersey Director of the Division of Taxation in the Department of Treasury, the use tax due pursuant to the "Sales and Use Tax Act," P.L. 1966, c. 30 (C.54:32B-1 et. seq.) on all their sales of tangible personal property delivered into the State of New Jersey. For purposes herein, "affiliate" shall mean any entity that : (a) directly, indirectly or constructively controls another entity; (b) is directly, indirectly, or constructively controlled by another entity; or (c) is subject to the control of a common entity. For purposes of the immediately preceding sentence, an entity controls another entity if it owns, directly or indirectly, more than fifty percent (50%) of the Ownership interest in that entity.

§ 19.3.1 The parties intend that this Article 19 shall comply with the rules and regulations promulgated pursuant to the Contractor Use Tax Collection Legislation and shall be interpreted consistent therewith.

§ 19.4 Notwithstanding anything contained in the Agreement to the contrary, the Contractor hereby agrees to indemnify and hold the Owner harmless from and against any and all fines, taxes, penalties, interest, claims, losses. Costs, expenses, liabilities, or damages arising out of or in connection with the Contractor's failure to comply with the terms and condition of Sections 19.1 and 19.2 to the fullest extent permitted by law and public policy.



OPERATING ENGINEERS **Rates Expiration Date : 03/31/2020**

{For apprentice rates refer to "Operating Engineers" apprentice rates in any county rate package}

The regular workday consists of 8 hours, Monday to Friday, between 6:00 AM and 4:30 PM.

SHIFT DIFFERENTIALS:

- Shift work must run for 5 consecutive workdays.
- When 2 shifts are worked, the second shift shall receive an additional 10% of the regular rate inclusive of benefits, per hour.
- When 3 shifts are worked, the second shift shall receive 8 hours pay for 7.5 hours of work, plus an additional 10% of the regular rate inclusive of benefits, per hour. The third shift shall receive 8 hours pay for 7 hours of work, plus an additional 15% of the regular rate inclusive of benefits, per hour.
- When such hours are mandated by the project owner, a shift that starts between 8:00 PM and midnight and ends by 6:00 AM Saturday, or that starts after 8:00 PM on Sunday, provided there are consecutive hours of work within the shift, shall receive an additional 15% of the regular rate, inclusive of benefits.
- On Highway, Road, Street, and Sewer projects irregular shifts starting between 5:00 PM and 12:00 AM may be worked Monday through Friday, and shall receive an additional 15% of the regular rate, inclusive of benefits. When working with other trades that receive a higher irregular shift rate, the Operating Engineer shall also receive the higher irregular shift rate.

OVERTIME:

- Hours in excess of 8 per day, or outside of the regular workday, Monday through Friday, that are not shift work, and all hours on Saturdays shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on Sundays and holidays shall be paid at double the regular rate, inclusive of benefits.
- Four 10-hour days may be worked, Monday through Thursday, at straight time, with all hours on Friday paid at time and one-half the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday. When all trades on a particular job site agree, the day after Thanksgiving may be substituted for Veteran's Day.

On hazardous waste removal work or asbestos removal work, on a state or federally designated hazardous waste site, where the operating engineer is in direct contact with hazardous material and when personal protective equipment is required for respiratory, skin, and eye protection, the operating engineer shall receive an additional 20% of the hourly wage, per hour.

OPERATING ENGINEERS **Rates Expiration Date : 03/31/2020**

Effective Dates:

07/01/2017			01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
48.98	30.70	79.68	80.68	82.03	83.03	85.38

CLASSIFICATIONS:

- A-Frame
- Backhoe (combination)
- Boom Attachment on loaders (Except pipehook)
- Boring & Drilling Machine
- Brush Chopper, Brush Shredder, Tree Shredder
- Bulldozer, finish grade
- Cableway
- Carryall
- Concrete Pump
- Concrete Pumping System (Pumpcrete & similar types)
- Conveyor, 125 feet or longer
- Drill Doctor (Duties include dust collector and maintenance)
- Front End Loader (2 cu. yds. but less than 5 cu. yds.)
- Grader, finish
- Groove Cutting Machine (ride-on type)
- Heater Planer
- Hoist (all types including steam, gas, diesel, electric, air hydraulic, single and double drum, concrete, brick shaft caisson, snorkle roof, and other similar types, Except Chicago-boom type)
- Hydraulic Crane (10 tons & under)
- Hydro-Axe
- Hydro-Blaster
- Jack (screw, air hydraulic, power-operated unit, or console type, Except hand jack or pile load test type)
- Log Skidder

OPERATING ENGINEERS **Rates Expiration Date : 03/31/2020**

Effective Dates:

07/01/2017			01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
48.98	30.70	79.68	80.68	82.03	83.03	85.38

CLASSIFICATIONS:

- Pan
- Paver, concrete
- Plate & Frame Filter Press
- Pumpcrete (unit type)
- Pumpcrete, Squeezecrete, or Concrete Pumping machine (regardless of size)
- Scraper
- Side Boom
- Straddle Carrier (Ross and similar types)
- Vacuum Truck
- Whiphammer
- Winch Truck (hoisting)

OPERATING ENGINEERS **Rates Expiration Date : 03/31/2020**

Effective Dates:

	07/01/2017		01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
47.07	30.70	77.77	78.77	80.12	81.12	83.47

CLASSIFICATIONS:

Asphalt Curbing Machine

Asphalt Plant Engineer

Asphalt Spreader

Autograde Curb Trimmer & Sidewalk Shoulder Slipform (CMI & similar types)

Autograde Curecrete Machine (CMI & similar types)

Autograde Tube Finisher & Texturing Machine (CMI & similar types)

Bar Bending Machines (Power)

Batcher, Batching Plant, & Crusher [On Site]

Belt Conveyor System

Boom-Type Skimmer Machine

Bridge Deck Finisher

Bulldozer (all sizes)

Captain (Power Boats)

Car Dumper (railroad)

Compressor & Blower unit for loading/unloading of concrete, cement, fly ash, or similar type materials (used independently or truck-mounted)

Compressor (2 or 3 battery)

Concrete Breaking Machine

Concrete Cleaning/Decontamination Machine

Concrete Finishing Machine

Concrete Saw or Cutter (ride-on type)

Concrete Spreader (Hetzl, Rexomatic & similar types)

Concrete Vibrator

OPERATING ENGINEERS **Rates Expiration Date : 03/31/2020**

Effective Dates:

07/01/2017			01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
47.07	30.70	77.77	78.77	80.12	81.12	83.47

CLASSIFICATIONS:

Conveyors - under 125 feet

Crane Signalman

Crushing Machine

Directional Boring Machine

Ditching Machine - Small (Ditchwitch, Vermeer or similar types)

Dope Pot - Mechanical (with or without pump)

Dumpster

Elevator

Fireman

Fork Lift (Economobile, Lull & similar types)

Front End Loader (1 cu. yd. and over but less than 2 cu. yds.)

Generator (2 or 3 battery)

Giraffe Grinder

Grader & Motor Patrols

Grout Pump

Gunnite Machine (Excluding nozzle)

Hammer - Vibratory (in conjunction with generator)

Heavy Equipment Robotics - Operator/Technician

Hoist (roof, tugger, aerial platform hoist, house car)

Hopper

Hopper Doors (power operated)

Ladder (motorized)

Laddervator

OPERATING ENGINEERS **Rates Expiration Date : 03/31/2020**

Effective Dates:

07/01/2017			01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
47.07	30.70	77.77	78.77	80.12	81.12	83.47

CLASSIFICATIONS:

Locomotive (Dinky-type)

Maintenance Utility Man

Master Environmental Maintenance Technician

Mechanic

Mixer (Except paving mixers)

Pavement Breaker (truck-mounted or small self-propelled ride-on type)

Pavement Breaker - maintenance of compressor or hydraulic unit

Pipe Bending Machine (power)

Pitch Pump

Plaster Pump (regardless of size)

Post Hole Digger (post pounder, auger)

Roller (black top)

Scale (power)

Seamen Pulverizing Mixer

Shoulder Widener

Silo

Skimmer Machine (boom type)

Steel Cutting Machine (service & maintenance)

Tamrock Drill

Tractor

Transfer Machines

Tug Captains

Tug Master (Power Boats)

OPERATING ENGINEERS **Rates Expiration Date : 03/31/2020**

Effective Dates:

07/01/2017			01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
47.07	30.70	77.77	78.77	80.12	81.12	83.47

CLASSIFICATIONS:

Ultra High Pressure Waterjet Cutting Tool System -
Operator/Maintenance Technician

Vacuum Blasting Machine - Operator/Maintenance Technician

Vibrating Plant (used with unloading)

Welder & Repair Mechanic

Effective Dates:

07/01/2017			01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
43.73	30.70	74.43	75.43	76.78	77.78	80.13

CLASSIFICATIONS:

Assistant Engineer/Oiler

Driller's Helper

Field Engineer - Transit man or Instrument man

Maintenance Apprentice (Deckhand)

Maintenance Apprentice (Oiler)

Mechanic's Helper

Off Road Back Dump

Effective Dates:

07/01/2017			01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
41.15	30.70	71.85	72.85	74.20	75.20	77.55

CLASSIFICATIONS:

Field Engineer - Rodman or Chainman

TERRITORY
ENTIRE STATE

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION

OPERATING ENGINEERS **Rates Expiration Date : 03/31/2020**

Effective Dates:

07/01/2017			01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
51.31	30.70	82.01	83.01	84.36	85.36	87.71

CLASSIFICATIONS:

Lead Engineer, Foreman Engineer, Safety Engineer (minimum)

OPERATING ENGINEERS **Rates Expiration Date : 03/31/2020**

Effective Dates:

	07/01/2017		01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
50.57	30.70	81.27	82.27	83.62	84.62	86.97

CLASSIFICATIONS:

- Autograde Pavement Profiler (CMI & similar types)
- Autograde Pavement Profiler - Recycle Type (CMI & similar types)
- Autograde Placer/Trimmer/Spreader Combination (CMI & similar types)
- Autograde Slipform Paver (CMI & similar types)
- Backhoe (Excavator)
- Central Power Plant
- Concrete Paving Machine
- Draglines
- Drill, Bauer, AMI and similar types
- Drillmaster, Quarrymaster
- Drillmaster/Quarrymaster (down-the-hole drill), rotary drill, self-propelled hydraulic drill, self-powered drill
- Elevator Grader
- Field Engineer-Chief of Party
- Front End Loader (5 cu. yards or larger)
- Gradall
- Grader, Rago
- Helicopter Co-Pilot
- Helicopter Communications Engineer
- Juntann Pile Driver
- Locomotive (large)
- Mucking Machine
- Pavement & Concrete Breaker (Superhammer & Hoe Ram)

OPERATING ENGINEERS **Rates Expiration Date : 03/31/2020**

Effective Dates:

07/01/2017			01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
50.57	30.70	81.27	82.27	83.62	84.62	86.97

CLASSIFICATIONS:

Pile Driver

Prentice Truck

Roadway Surface Grinder

Scooper (loader & shovel)

Shovel (Excavator)

Trackhoe (Excavator)

Tree Chopper with boom

Trenching Machine (cable plow)

Tunnel Boring Machine

OPERATING ENGINEERS **Rates Expiration Date : 03/31/2020**

Effective Dates:

07/01/2017			01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
45.44	30.70	76.14	77.14	78.49	79.49	81.84

CLASSIFICATIONS:

- Chipper
- Compressor (single)
- Concrete Spreader (small type)
- Conveyor Loader (Except elevator graders)
- Engines, Large Diesel (1620 HP) & Staging Pump
- Farm Tractor
- Fertilizing Equipment (operation & maintenance)
- Fine Grade Machine (small type)
- Form Line Grader (small type)
- Front End Loader (under 1 cubic yard)
- Generator (single)
- Grease, Gas, Fuel, & Oil Supply Trucks
- Heaters (Nelson or other type)
- Lights - portable generating light plant
- Mixer, Concrete (small)
- Mulching Equipment (operation & maintenance)
- Power Broom or Sweeper
- Pump (diesel engine & hydraulic - regardless of power)
- Pump (larger than 2 inch suction, including submersible pumps)
- Road Finishing Machine (small type)
- Roller - grade, fill, or stone base
- Seeding Equipment (operation & maintenance)
- Sprinkler & Water Pump Trucks

OPERATING ENGINEERS Rates Expiration Date : 03/31/2020

Effective Dates:

	07/01/2017		01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
45.44	30.70	76.14	77.14	78.49	79.49	81.84

CLASSIFICATIONS:

Steam Generator or Boiler

Stone Spreader

Tamping Machine (vibrating ride-on type)

Temporary Heating Plant (Nelson or other type, including propane, natural gas, and flow-type units)

Water or Sprinkler Truck

Welding Machine (gas, diesel, or electric convertor, of any type)

Welding System - Multiple (rectifier transformer type)

Wellpoint Systems (including installation by bull gang and maintenance)

Effective Dates:

	07/01/2017		01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
52.39	30.70	83.09	84.09	85.44	86.44	88.79

CLASSIFICATIONS:

Helicopter Pilot/Engineer

Effective Dates:

	07/01/2017		01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
57.07	30.70	87.77	88.77	90.12	91.12	93.47

CLASSIFICATIONS:

Cranes, Derricks, Pile Driver (all types), over 100 tons and TOWER CRANE with boom (including jib and/or leads) 140 ft. and over

Effective Dates:

	07/01/2017		01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
56.07	30.70	86.77	87.77	89.12	90.12	92.47

CLASSIFICATIONS:

Cranes, Derricks, Pile Driver (all types), over 100 tons and TOWER CRANE with boom (including jib and/or leads) from 100 ft. to 139 ft.

OPERATING ENGINEERS **Rates Expiration Date : 03/31/2020**

Effective Dates:

07/01/2017			01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
52.57	30.70	83.27	84.27	85.62	86.62	88.97

CLASSIFICATIONS:

Cranes, Derricks, Pile Driver (all types) , under 100 tons with a boom (including jib and/or leads) 140 ft. and over

Effective Dates:

07/01/2017			01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
55.07	30.70	85.77	86.77	88.12	89.12	91.47

CLASSIFICATIONS:

Cranes, Derricks, Pile Driver (all types), over 100 tons and TOWER CRANE with a boom (including jib and/or leads) under 100 ft.

Effective Dates:

07/01/2017			01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
51.57	30.70	82.27	83.27	84.62	85.62	87.97

CLASSIFICATIONS:

Cranes, Derricks, Pile Driver (all types), under 100 tons with a boom (including jib and/or leads) from 100 ft. to 139 ft.

STRUCTURAL STEEL ERECTION **Rates Expiration Date : 03/31/2020**

{For apprentice rates refer to "Operating Engineers" apprentice rates in any county rate package}

The regular workday consists of 8 hours, Monday to Friday, between 6:00 AM and 4:30 PM.

SHIFT DIFFERENTIALS:

- Shift work must run for 5 consecutive workdays.
- When 2 shifts are worked, the second shift shall receive an additional 10% of the regular rate inclusive of benefits, per hour.
- When 3 shifts are worked, the second shift shall receive 8 hours pay for 7.5 hours of work, plus an additional 10% of the regular rate inclusive of benefits, per hour. The third shift shall receive 8 hours pay for 7 hours of work, plus an additional 15% of the regular rate inclusive of benefits, per hour.
- When such hours are mandated by the project owner, a shift that starts between 8:00 PM and midnight and ends by 6:00 AM Saturday, or that starts after 8:00 PM on Sunday, provided there are consecutive hours of work within the shift, shall receive an additional 15% of the regular rate, inclusive of benefits.
- On Highway, Road, Street, and Sewer projects irregular shifts starting between 5:00 PM and 12:00 AM may be worked Monday through Friday, and shall receive an additional 15% of the regular rate, inclusive of benefits. When working with other trades that receive a higher irregular shift rate, the Operating Engineer shall also receive the higher irregular shift rate.

OVERTIME:

- Hours in excess of 8 per day, or outside of the regular workday, Monday through Friday, that are not shift work, and all hours on Saturdays shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on Sundays and holidays shall be paid at double the regular rate, inclusive of benefits.
- Four 10-hour days may be worked, Monday through Thursday, at straight time, with all hours on Friday paid at time and one-half the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday. When all trades on a particular job site agree, the day after Thanksgiving may be substituted for Veteran's Day.

On hazardous waste removal work or asbestos removal work, on a state or federally designated hazardous waste site, where the operating engineer is in direct contact with hazardous material and when personal protective equipment is required for respiratory, skin, and eye protection, the operating engineer shall receive an additional 20% of the hourly wage, per hour.

Effective Dates:

	07/01/2017		01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
54.20	30.70	84.90	85.90	87.25	88.25	90.60

CLASSIFICATIONS:

Helicopter Pilot or Engineer

STRUCTURAL STEEL ERECTION **Rates Expiration Date : 03/31/2020**

Effective Dates:

07/01/2017			01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
50.14	30.70	80.84	81.84	83.19	84.19	86.54

CLASSIFICATIONS:

A-Frame

Cherry Picker -10 tons or less (Over 10 tons use crane rate)

Hoist (all types Except Chicago-boom)

Jack (screw, air hydraulic, power-operated unit or console type, Except hand jack or pile load test type)

Side Boom

Straddle Carrier

Effective Dates:

07/01/2017			01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
47.48	30.70	78.18	79.18	80.53	81.53	83.88

CLASSIFICATIONS:

Aerial Platform Used On Hoists

Apprentice Engineer/Oiler with Compressor or Welding Machine

Captain (Power Boats)

Compressor (2 or 3 in battery)

Conveyor or Tugger Hoist

Elevator or House Car

Fireman

Forklift

Generator (2 or 3)

Maintenance Utility Man

Tug Master (Power Boats)

Welding Machines, Gas or Electric Converters on any type-2 or 3 in battery including diesels

STRUCTURAL STEEL ERECTION **Rates Expiration Date : 03/31/2020**

Effective Dates:

	07/01/2017		01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
45.95	30.70	76.65	77.65	79.00	80.00	82.35

CLASSIFICATIONS:

Compressor (Single)

Generators

Welding Machines, Gas, Diesel, Or Electric Converters of any type-single

Welding System, Multiple (Rectifier Transformer Type)

Effective Dates:

	07/01/2017		01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
44.19	30.70	74.89	75.89	77.24	78.24	80.59

CLASSIFICATIONS:

Assistant Engineer/Oiler

Drillers Helper

Field Engineer - Transit/Instrument Man

Maintenance Apprentice (Deckhand)

Maintenance Apprentice (Oiler)

Effective Dates:

	07/01/2017		01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
51.76	30.70	82.46	83.46	84.81	85.81	88.16

CLASSIFICATIONS:

Lead Engineer, Foreman Engineer, Safety Engineer (Minimum)

Effective Dates:

	07/01/2017		01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
41.15	30.70	71.85	72.85	74.20	75.20	77.55

CLASSIFICATIONS:

Field Engineer - Rodman or Chainman

STRUCTURAL STEEL ERECTION **Rates Expiration Date : 03/31/2020**

Effective Dates:

07/01/2017			01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
50.90	30.70	81.60	82.60	83.95	84.95	87.30

CLASSIFICATIONS:

Field Engineer-Chief of Party

Effective Dates:

07/01/2017			01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
59.09	30.70	89.79	90.79	92.14	93.14	95.49

CLASSIFICATIONS:

Cranes (all cranes, land or floating with booms, including jib, 140 ft. and over, above ground). Derricks (all derricks, land, floating or Chicago Boom type with booms including jib, 140 ft. and over, above ground), and Pile Drivers (all types) over 100 tons and Tower Cranes.

Effective Dates:

07/01/2017			01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
57.43	30.70	88.13	89.13	90.48	91.48	93.83

CLASSIFICATIONS:

Cranes (all cranes, land or floating with booms including jib, less than 140 ft. above ground), Derricks (all derricks, land, floating or Chicago Boom type with booms including jib, less than 140 ft. above ground), Pile Drivers (all types), over 100 tons and Tower Crane.

Effective Dates:

07/01/2017			01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
54.59	30.70	85.29	86.29	87.64	88.64	90.99

CLASSIFICATIONS:

Cranes (all cranes, land or floating with booms including jib, 140 ft. and over, above ground), Derricks (all derricks, land, floating or Chicago Boom type with booms including jib, 140 ft. and over, above ground), Pile Drivers (all types), under 100 tons.

Effective Dates:

07/01/2017			01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
52.93	30.70	83.63	84.63	85.98	86.98	89.33

CLASSIFICATIONS:

Cranes (all cranes, land or floating with booms including jib, less than 140 ft. above ground), Derricks (all derricks, land, floating or Chicago Boom type with booms including jib, less than 140 ft. above ground), Pile Drivers (all types), under 100 tons.

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STRUCTURAL STEEL ERECTION Rates Expiration Date : 03/31/2020

Effective Dates:

07/01/2017			01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
54.59	30.70	85.29	86.29	87.64	88.64	90.99

CLASSIFICATIONS:

Helicopter Co-Pilot

Helicopter Communications Engineer

TEST BORING PRELIMINARY TO CONSTRUCTION-SOUTH/WEST **Rates Expiration Date : 03/31/2020**

THESE RATES APPLY IN THE FOLLOWING COUNTIES ONLY:

Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Hunterdon, Mercer, Monmouth, Ocean, Salem, Sussex, Warren

The regular workday consists of 8 hours, Monday to Friday, between 6:00 AM and 4:30 PM.

SHIFT DIFFERENTIALS:

- Shift work must run for 5 consecutive workdays.
- When 2 shifts are worked, the second shift shall receive an additional 10% of the regular rate inclusive of benefits, per hour.
- When 3 shifts are worked, the second shift shall receive 8 hours pay for 7.5 hours of work, plus an additional 10% of the regular rate inclusive of benefits, per hour. The third shift shall receive 8 hours pay for 7 hours of work, plus an additional 15% of the regular rate inclusive of benefits, per hour.
- When such hours are mandated by the project owner, a shift that starts between 8:00 PM and midnight and ends by 6:00 AM Saturday, or that starts after 8:00 PM on Sunday, provided there are consecutive hours of work within the shift, shall receive an additional 15% of the regular rate, inclusive of benefits.
- On Highway, Road, Street, and Sewer projects irregular shifts starting between 5:00 PM and 12:00 AM may be worked Monday through Friday, and shall receive an additional 15% of the regular rate, inclusive of benefits. When working with other trades that receive a higher irregular shift rate, the Operating Engineer shall also receive the higher irregular shift rate.

OVERTIME:

- Hours in excess of 8 per day, or outside of the regular workday, Monday through Friday, that are not shift work, and all hours on Saturdays shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on Sundays and holidays shall be paid at double the regular rate, inclusive of benefits.
- Four 10-hour days may be worked, Monday through Thursday, at straight time, with all hours on Friday paid at time and one-half the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday. When all trades on a particular job site agree, the day after Thanksgiving may be substituted for Veteran's Day.

On hazardous waste removal work or asbestos removal work, on a state or federally designated hazardous waste site, where the operating engineer is in direct contact with hazardous material and when personal protective equipment is required for respiratory, skin, and eye protection, the operating engineer shall receive an additional 20% of the hourly wage, per hour.

Effective Dates:

	07/01/2017		01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
50.57	30.70	81.27	82.27	83.62	84.62	86.97

CLASSIFICATIONS:

Driller

Effective Dates:

	07/01/2017		01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
43.73	30.70	74.43	75.43	76.78	77.78	80.13

CLASSIFICATIONS:

Driller's Helper

FREE AIR TUNNEL JOBS **Rates Expiration Date : 02/28/2018**

{For apprentice rates refer to "Heavy & General" apprentice rates in any county rate package}

The regular workday consists of 8 hours, starting at 7:00 AM or 8:00 AM.

SHIFT DIFFERENTIALS:

- Shifts must start at 3:00 PM, 4:00 PM, 12:00 AM, or 1:00 AM, to be considered shift work, except when the project owner mandates special hours of work in the job specifications, in which case those hours may be considered shift work.
- When such hours are mandated by the project owner, a shift that begins before midnight on Friday and ends on Saturday morning, or that begins at or after 8:00 PM on Sunday and ends on Monday morning may be paid at the shift differential rate.
- Shifts shall receive an additional \$2.50 per hour.

OVERTIME:

- Hours in excess of 8 per day, Monday through Friday, or outside of the regular workday that are not shift work, and all hours on Saturdays, shall be paid at time and one-half the hourly rate. All hours on Sundays and holidays shall be paid at double the hourly rate.
- Four 10-hour days may be worked, Monday through Thursday, at straight time, with Friday used as a make-up day for a day lost to inclement weather. If Friday is not a make-up day, all hours on Friday shall be paid at time and one-half the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday. Veterans Day may be substituted for the day after Thanksgiving. However, in the trading of Veterans Day for the day after Thanksgiving, if overtime is worked on Veterans Day, it shall be paid at double the hourly rate.

Hazardous Waste Work:

- where Level A, B, or C protection is required: + \$3.00/hr
- other Hazardous Waste site: + \$1.00/hr

Effective Dates:

03/01/2017

Rate	Fringe	Total
41.50	29.03	70.53

CLASSIFICATIONS:

Walking Boss & Superintendent

Effective Dates:

03/01/2017

Rate	Fringe	Total
41.20	29.03	70.23

CLASSIFICATIONS:

Heading Foreman, Shaft Foreman, Rod Foreman, Electrician Foreman, Rigging Foreman

FREE AIR TUNNEL JOBS **Rates Expiration Date : 02/28/2018**

Effective Dates:

03/01/2017

Rate	Fringe	Total
40.70	29.03	69.73

CLASSIFICATIONS:

Iron Foreman, Caulking Foreman, Form Foreman, Cement Finishing Foreman, Concrete Foreman, Track Foreman, Cleanup Foreman, Grout Foreman

Effective Dates:

03/01/2017

Rate	Fringe	Total
43.20	29.03	72.23

CLASSIFICATIONS:

Blaster

Effective Dates:

03/01/2017

Rate	Fringe	Total
40.15	29.03	69.18

CLASSIFICATIONS:

Top Labor Foreman

Effective Dates:

03/01/2017

Rate	Fringe	Total
39.80	29.03	68.83

CLASSIFICATIONS:

Skilled Men (including Caulker, Powder Carrier, all other skilled men)

Skilled Men (including Miner, Drill Runner, Iron Man, Conveyor Man, Manitenance Man, Safety Miner, Rigger, Block Layer, Cement Finisher, Tod Man)

Effective Dates:

03/01/2017

Rate	Fringe	Total
39.65	29.03	68.68

CLASSIFICATIONS:

Semi-Skilled Men (including Bell or Signal Man Top or Bottom, Form Worker & Mover, Concrete Worker, Shaft Man, Tunnel Laborer, Caulker's Helper, all other semi-skilled)

Semi-Skilled Men (including Miner's Helper, Chuck Tender, Track Man, Nipper, Brake Man, Derail Man, Cable Man, Hose Man, Gravel Man, Form Man)

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FREE AIR TUNNEL JOBS Rates Expiration Date : 02/28/2018

Effective Dates:

03/01/2017

Rate	Fringe	Total
39.15	29.03	68.18

CLASSIFICATIONS:

All Others (including Powder Watchman, Change House Attendant, Top Laborer)

DRILL FOR GROUND WATER SUPPLY **Rates Expiration Date : 03/31/2020**

The well driller and/or helper may perform all work relative to the construction, finishing, and servicing of wells, pumps and borings for ground water supply. The present methods of well drilling entailing as they do, many diverse job operations calling for drilling, pump discharge, piping, and the operation of various types of related power equipment, shall all be within the job duties and functions of the well driller and/or helper. In the event that an extension of work should occur beyond water well drilling functions, into the field of general construction work, such extension of work would come under the appropriate rates listed elsewhere in this wage determination.

- For Work Hours, Shift Differentials, Overtime Rates, and Recognized Holidays see the "Operating Engineers" section of this wage determination.

Effective Dates:

	07/01/2017		01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
49.32	30.70	80.02	81.02	82.37	83.37	85.72

CLASSIFICATIONS:

Driller

Effective Dates:

	07/01/2017		01/01/2018	07/01/2018	01/01/2019	07/01/2019
Rate	Fringe	Total	Total	Total	Total	Total
42.48	30.70	73.18	74.18	75.53	76.53	78.88

CLASSIFICATIONS:

Driller's Helper

OPERATING ENGINEERS MARINE-DREDGING **Rates Expiration Date : 09/30/2018**

NOTE: Boat crews carrying explosive material (dynamite, pourfex, and other similar materials) shall be paid at 120% of the hourly wage rate for hours engaged in handling of said materials. Employees required to possess a Hazardous Material Certification as a condition of employment shall be compensated at 120% of the hourly wage rate.

OVERTIME:

Hours in excess of 40 per week, and all hours on Saturdays and Sundays, shall be paid at time and one-half the hourly rate. All hours on holidays shall be paid at double the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Martin Luther King Day, Good Friday, Memorial Day, July 4th, Labor Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday.

Effective Dates:

10/01/2016			10/01/2017
Rate	Fringe	Total	Total
37.25	13.78	51.03	52.51

CLASSIFICATIONS:

Lead Dredgerman, Operator, Leverman

Licensed Tug Operator (over 1000 HP)

Effective Dates:

10/01/2016			10/01/2017
Rate	Fringe	Total	Total
32.22	13.38	45.60	46.95

CLASSIFICATIONS:

Derrick Operator, Spider/Spill Barge Operator

Engineer, Electrician, Chief Welder, Chief Mate

Fill Placer, Operator II

Licensed Boat Operator

Maintenance Engineer

Effective Dates:

10/01/2016			10/01/2017
Rate	Fringe	Total	Total
30.33	13.23	43.56	44.86

CLASSIFICATIONS:

Certified Welder

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OPERATING ENGINEERS MARINE-DREDGING **Rates Expiration Date : 09/30/2018**

Effective Dates:

10/01/2016			10/01/2017
Rate	Fringe	Total	Total
29.50	12.86	42.36	43.64

CLASSIFICATIONS:

Mate, Drag Barge Operator, Steward, Assistant Fill Placer

Welder

Effective Dates:

10/01/2016			10/01/2017
Rate	Fringe	Total	Total
28.54	12.78	41.32	42.58

CLASSIFICATIONS:

Boat Operator

Effective Dates:

10/01/2016			10/01/2017
Rate	Fringe	Total	Total
23.71	12.10	35.81	36.92

CLASSIFICATIONS:

Shoreman, Deckhand, Rodman, Scowman

MICROSURFACING/SLURRY SEAL Rates Expiration Date : 02/28/2018

THESE RATES APPLY IN THE FOLLOWING COUNTIES ONLY:

Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Mercer, Ocean, Salem

IN ALL OTHER COUNTIES use the Heavy and General Laborers - North "Slurry Seal Laborer" rates.

SHIFT DIFFERENTIALS:

Any shift starting at 3:30 PM or later shall receive an additional \$0.35/hr

OVERTIME:

Hours in excess of 8 per day or 40 per week shall be paid at time and one-half the hourly rate. All hours on holidays shall be paid at double the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Washington's Birthday, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day.

Effective Dates:

03/01/2017

Rate	Fringe	Total
36.50	21.27	57.77

CLASSIFICATIONS:

Foreman

Effective Dates:

03/01/2017

Rate	Fringe	Total
33.80	21.27	55.07

CLASSIFICATIONS:

Box man

Effective Dates:

03/01/2017

Rate	Fringe	Total
31.75	21.27	53.02

CLASSIFICATIONS:

Microsurface/Slurry Preparation

Effective Dates:

03/01/2017

Rate	Fringe	Total
31.75	21.27	53.02

CLASSIFICATIONS:

Squeegee man

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MICROSURFACING/SLURRY SEAL Rates Expiration Date : 02/28/2018

Effective Dates:

03/01/2017

Rate	Fringe	Total
30.30	21.27	51.57

CLASSIFICATIONS:

Cleaner, Taper

ASPHALT LABORERS - SOUTH **Rates Expiration Date : 02/28/2018**

"THESE RATES APPLY IN THE FOLLOWING COUNTIES ONLY: Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Mercer, Ocean, Salem

{For apprentice rates refer to "Laborer - Heavy & General" apprentice rates in any county rate package}

The regular workday consists of 8 hours, starting at 7:00 AM or 8:00 AM.

SHIFT DIFFERENTIALS:

- Shifts must start at 3:00 PM, 4:00 PM, 12:00 AM, or 1:00 AM, to be considered shift work, except when the project owner mandates special hours of work in the job specifications, in which case those hours may be considered shift work.
- When such hours are mandated by the project owner, a shift that begins before midnight on Friday and ends on Saturday morning, or that begins at or after 8:00 PM on Sunday and ends on Monday morning may be paid at the shift differential rate.
- Shifts shall receive an additional \$2.50 per hour.

OVERTIME:

- Hours in excess of 8 per day, Monday through Friday, or outside of the regular workday that are not shift work, and all hours on Saturdays, shall be paid at time and one-half the hourly rate. All hours on Sundays and holidays shall be paid at double the hourly rate.
- Four 10-hour days may be worked, Monday through Thursday, at straight time, with Friday used as a make-up day for a day lost to inclement weather. If Friday is not a make-up day, all hours on Friday shall be paid at time and one-half the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday. Veterans Day may be substituted for the day after Thanksgiving. However, in the trading of Veterans Day for the day after Thanksgiving, if overtime is worked on Veterans Day, it shall be paid at double the hourly rate.

Hazardous Waste Work:

- where Level A, B, or C protection is required: + \$3.00/hr
- other Hazardous Waste site: + \$1.00/hr

Effective Dates:

03/01/2017

Rate	Fringe	Total
41.00	29.03	70.03

CLASSIFICATIONS:

Paving Foreman

Effective Dates:

03/01/2017

Rate	Fringe	Total
39.55	29.03	68.58

CLASSIFICATIONS:

Head Raker

Effective Dates:

03/01/2017

Rate	Fringe	Total
39.40	29.03	68.43

CLASSIFICATIONS:

Raker, Screedman, Luteman

TERRITORY
ENTIRE STATE

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION

ASPHALT LABORERS - SOUTH Rates Expiration Date : 02/28/2018

Effective Dates:

03/01/2017

Rate	Fringe	Total
39.15	29.03	68.18

CLASSIFICATIONS:

Tampers, Smoothers, Kettlemen,
Painters, Shovelers, Roller Boys

Effective Dates:

03/01/2017

Rate	Fringe	Total
39.25	29.03	68.28

CLASSIFICATIONS:

Milling Controller

Effective Dates:

03/01/2017

Rate	Fringe	Total
39.45	29.03	68.48

CLASSIFICATIONS:

Traffic Control Coordinator

TEST BORING PRELIMINARY TO CONSTRUCTION-NORTH **Rates Expiration Date : 10/16/2018**

THESE RATES APPLY IN THE FOLLOWING COUNTIES ONLY:
Bergen, Essex, Hudson, Middlesex, Morris, Passaic, Somerset, Union

SHIFT DIFFERENTIAL:

Employees on a shift other than between the hours of 8:00 AM and 5:00 PM shall receive an additional \$1.00 per hour.

OVERTIME:

Hours in excess of 8 per day, Monday through Friday, and all hours on Saturday shall be paid at time and one-half the regular rate. All hours on Sundays and holidays shall be paid at double the regular rate.

RECOGNIZED HOLIDAYS: New Year's Day, Memorial Day, July 4th, Labor Day, Thanksgiving Day, and Christmas Day. Sunday holidays observed the following Monday.

Hazardous Waste Pay (for Levels A, B, and C): an additional 10% of the hourly rate, per hour.

A newly hired Helper with no experience in the industry shall be paid as follows:

- 1st year on the job - 70% of Helper wage rate
- 2nd year on the job - 80% of Helper wage rate
- 3rd year on the job - 90% of Helper wage rate
- All helpers receive full fringe benefit rate.

Effective Dates:

11/01/2016			10/17/2017
Rate	Fringe	Total	Total
30.96	24.76	55.72	57.17

CLASSIFICATIONS:

Helper (4th year helper)

Effective Dates:

11/01/2016			10/17/2017
Rate	Fringe	Total	Total
38.82	24.76	63.58	65.24

CLASSIFICATIONS:

Driller

Effective Dates:

11/01/2016			10/17/2017
Rate	Fringe	Total	Total
44.64	24.76	69.40	71.28

CLASSIFICATIONS:

Foreman

HEAVY & GENERAL LABORERS - NORTH **Rates Expiration Date : 02/28/2018**

THESE RATES APPLY IN THE FOLLOWING COUNTIES ONLY:

Bergen, Essex, Hudson, Hunterdon, Middlesex, Monmouth, Morris, Passaic, Somerset, Sussex, Union, Warren

{For apprentice rates refer to "Laborer - Heavy & General" apprentice rates in any county rate package}

The regular workday consists of 8 hours, starting at 7:00 AM or 8:00 AM.

SHIFT DIFFERENTIALS:

- Shifts must start at 3:00 PM, 4:00 PM, 12:00 AM, or 1:00 AM, to be considered shift work, except when the project owner mandates special hours of work in the job specifications, in which case those hours may be considered shift work.
- When such hours are mandated by the project owner, a shift that begins before midnight on Friday and ends on Saturday morning, or that begins at or after 8:00 PM on Sunday and ends on Monday morning may be paid at the shift differential rate.
- Shifts shall receive an additional \$2.50 per hour.

OVERTIME:

- Hours in excess of 8 per day, Monday through Friday, or outside of the regular workday that are not shift work, and all hours on Saturdays, shall be paid at time and one-half the hourly rate. All hours on Sundays and holidays shall be paid at double the hourly rate.
- Four 10-hour days may be worked, Monday through Thursday, at straight time, with Friday used as a make-up day for a day lost to inclement weather. If Friday is not a make-up day, all hours on Friday shall be paid at time and one-half the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday. Veterans Day may be substituted for the day after Thanksgiving. However, in the trading of Veterans Day for the day after Thanksgiving, if overtime is worked on Veterans Day, it shall be paid at double the hourly rate.

Hazardous Waste Work:

- where Level A, B, or C protection is required: + \$3.00/hr
- other Hazardous Waste site: + \$1.00/hr

Effective Dates:

03/01/2017

Rate	Fringe	Total
38.75	29.03	67.78

CLASSIFICATIONS:

"D" Rate:

basic, landscape, asphalt, slurry seal, or railroad track laborer; utility meter installer; flagman; salamander tender; pitman; dumpman; rakers or tampers on cold patch work; wrappers or coaters of pipe; waterproofer; timberman; wagon drill or drill master helper; powder carrier; magazine tender; signal man; power buggy operator; tree cutter; operator of basic power tools

Effective Dates:

03/01/2017

Rate	Fringe	Total
39.45	29.03	68.48

CLASSIFICATIONS:

"C" Rate:

pipe layer; laser man; conduit or duct line layer; operator of jack hammer, chipping hammer, pavement breaker, concrete cutter, asphalt cutter, sheet hammer, or walk-behind saw cutter; sandblaster; acetylene cutting or burning; wagon drill, directional drill, or hydraulic drill operator; drill master; core driller; traffic control coordinator; asphalt raker or lute man

HEAVY & GENERAL LABORERS - NORTH **Rates Expiration Date : 02/28/2018**

Effective Dates:

03/01/2017

Rate	Fringe	Total
39.70	29.03	68.73

CLASSIFICATIONS:

"B" Rate:

concrete finisher; setter of brick or stone pavers; stone cutter; form setter; manhole, catch basin, or inlet builder; asphalt screedman; rammer; hardscaping; gunite nozzle man

Effective Dates:

03/01/2017

Rate	Fringe	Total
43.25	29.03	72.28

CLASSIFICATIONS:

"A" Rate:

blaster

Effective Dates:

03/01/2017

Rate	Fringe	Total
41.00	29.03	70.03

CLASSIFICATIONS:

"FOREMAN" Rate:

labor foreman, asphalt foreman, drill foreman, pipe foreman, grade foreman, finisher foreman, concrete foreman

Effective Dates:

03/01/2017

Rate	Fringe	Total
42.00	29.03	71.03

CLASSIFICATIONS:

"GENERAL FOREMAN" Rate

HEAVY & GENERAL LABORERS - SOUTH **Rates Expiration Date : 02/28/2018**

THESE RATES APPLY IN THE FOLLOWING COUNTIES ONLY:

Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Mercer, Ocean, Salem

{For apprentice rates refer to "Laborer - Heavy & General" apprentice rates in any county rate package}

The regular workday consists of 8 hours, starting at 7:00 AM or 8:00 AM.

SHIFT DIFFERENTIALS:

- Shifts must start at 3:00 PM, 4:00 PM, 12:00 AM, or 1:00 AM, to be considered shift work, except when the project owner mandates special hours of work in the job specifications, in which case those hours may be considered shift work.
- When such hours are mandated by the project owner, a shift that begins before midnight on Friday and ends on Saturday morning, or that begins at or after 8:00 PM on Sunday and ends on Monday morning may be paid at the shift differential rate.
- Shifts shall receive an additional \$2.50 per hour.

OVERTIME:

- Hours in excess of 8 per day, Monday through Friday, or outside of the regular workday that are not shift work, and all hours on Saturdays, shall be paid at time and one-half the hourly rate. All hours on Sundays and holidays shall be paid at double the hourly rate.
- Four 10-hour days may be worked, Monday through Thursday, at straight time, with Friday used as a make-up day for a day lost to inclement weather. If Friday is not a make-up day, all hours on Friday shall be paid at time and one-half the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday. Veterans Day may be substituted for the day after Thanksgiving. However, in the trading of Veterans Day for the day after Thanksgiving, if overtime is worked on Veterans Day, it shall be paid at double the hourly rate.

Hazardous Waste Work:

- where Level A, B, or C protection is required: + \$3.00/hr
- other Hazardous Waste site: + \$1.00/hr

Effective Dates:

03/01/2017

Rate	Fringe	Total
38.75	29.03	67.78

CLASSIFICATIONS:

basic, landscape, or railroad track laborer; utility meter installer; flagman; salamander tender; pitman; dumpman; rakers or tampers on cold patch work; wrappers or coaters of pipe; waterproofers; tree cutter, timberman

Effective Dates:

03/01/2017

Rate	Fringe	Total
39.45	29.03	68.48

CLASSIFICATIONS:

wagon drill or drill master helper; powder carrier; magazine tender; signal man

HEAVY & GENERAL LABORERS - SOUTH **Rates Expiration Date : 02/28/2018**

Effective Dates:

03/01/2017

Rate	Fringe	Total
39.45	29.03	68.48

CLASSIFICATIONS:

pipe layer; laser man; conduit or duct line layer; operator of jack hammer, chipping hammer, pavement breaker, concrete cutter, asphalt cutter, sheet hammer, or walk-behind saw cutter; sandblaster; acetylene cutting or burning

Effective Dates:

03/01/2017

Rate	Fringe	Total
39.45	29.03	68.48

CLASSIFICATIONS:

wagon or directional drill operator; drill master

Effective Dates:

03/01/2017

Rate	Fringe	Total
43.25	29.03	72.28

CLASSIFICATIONS:

blaster

Effective Dates:

03/01/2017

Rate	Fringe	Total
41.00	29.03	70.03

CLASSIFICATIONS:

labor foreman, drill foreman, pipe foreman, grade foreman, finisher foreman, concrete foreman

Effective Dates:

03/01/2017

Rate	Fringe	Total
42.00	29.03	71.03

CLASSIFICATIONS:

general foreman

TERRITORY
ENTIRE STATE

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION

HEAVY & GENERAL LABORERS - SOUTH **Rates Expiration Date : 02/28/2018**

Effective Dates:

03/01/2017

Rate	Fringe	Total
39.70	29.03	68.73

CLASSIFICATIONS:

concrete finisher; setter of brick or stone pavers; stone cutter; form setter; manhole, catch basin, or inlet builder; rammer; gunite nozzle man

PIPELINE - MAINLINE TRANSMISSION **Rates Expiration Date : 06/03/2018**

These rates apply to the following: welding on Transportation Mainline pipe lines (cross-country pipe lines, or any segments thereof, transporting coal, gas, oil, water or other transportable materials, vapors or liquids, including portions of such pipe lines within private property boundaries up to the final metering station or connection - the point where a valve, consumer connection, or town border station divides mainline transmission lines or higher pressure lateral and branch lines from lower pressure distribution systems).

PER DIEM PAYMENT:

In addition to the total wage rate paid for each craft, the following per diem (per day) amounts must also be paid - Pipeline Journeyman: \$42.50; Pipeline Journeyman Welder: \$102.50; and Pipeline Helper: \$42.50. Note: in order to receive the per diem payment an employee must work a minimum of 8 hours in a 24 hour period.

NOTES:

- Journeymen employed as "stringer bead" welders and journeymen who are regularly employed as "hot-pass" welders shall receive \$1.00 per hour more than other journeymen.
- Welders running "stringer bead" or "hot-pass" on "cutouts" or "tie-ins" on a production basis shall be paid \$1.00 per hour above the journeymen rate.
- Whenever a welder helper is employed using a power buffer or power grinder immediately behind the stringer bead and/or hot-pass welders, and the pipe gang is set on a production basis, the helper shall be paid \$2.00 per hour above the helper rate.
- If back welding is performed inside a pipe under either or both of the following conditions, the welder engaged in the welding will receive \$3.00 per hour above the regular rate for the job only for the days on which such back welding is performed:
 - The employer elects, as a regular procedure, to back weld each line-up. This condition is not intended to apply to occasional back welding performed by the pipe gang to repair a bead, to rectify a "high-lo" condition or wall thickness, etc.
 - A welder is required to back weld a completed weld behind the firing line.
- If the welder helper is required to go inside the pipe for the purpose of brushing, buffing and grinding the weld, they shall receive a wage rate \$1.00 per hour above the regular helper rate for the days involved.
- Welders working on "hot work" shall be paid \$2.00 per hour above the regular rate for each day engaged in such work. "Hot work" is defined as work on lines in service where there is the danger of fire or explosion.

The regular workday shall be 8 hours, between 8:00 AM and 4:30 PM.

OVERTIME:

Hours in excess of 8 per day, and all hours on Sundays shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on holidays shall be paid at double the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, July 4th, Labor Day, Thanksgiving Day, and Christmas Day. Sunday holidays observed the following Monday.

Effective Dates:

06/05/2017

Rate	Fringe	Total
54.58	28.97	83.55

CLASSIFICATIONS:

Pipeline Journeyman Welder

TERRITORY
ENTIRE STATE

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION

PIPELINE - MAINLINE TRANSMISSION Rates Expiration Date : 06/03/2018

Effective Dates:

06/05/2017

Rate	Fringe	Total
54.58	28.97	83.55

CLASSIFICATIONS:

Pipeline Journeyman

Effective Dates:

06/05/2017

Rate	Fringe	Total
33.27	19.97	53.24

CLASSIFICATIONS:

Pipeline Helper

PIPELINE - GAS DISTRIBUTION **Rates Expiration Date : 10/31/2017**

These rates apply to the following: welding on gas line distribution systems (that portion of the gas distribution system placed in streets, roads, subways, tunnels, viaducts, highways and easements which serves the users of gas).

SHIFT DIFFERENTIALS:

An "irregular" shift may start any time from 5:00 PM to 12:00 AM, Monday through Friday, and shall receive an additional 15% of the regular rate per hour, inclusive of benefits.

OVERTIME:

Hours in excess of forty per week, and all hours on Saturdays shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on Sundays and holidays shall be paid at double the regular rate, inclusive of benefits.

RECOGNIZED HOLIDAYS: New Year's Day, Memorial Day, July 4th, Labor Day, Thanksgiving Day, and Christmas Day. Sunday holidays observed the following Monday.

Effective Dates:

11/01/2016

Rate	Fringe	Total
57.58	21.55	79.13

CLASSIFICATIONS:

Pipeline Journeyman Welder

Effective Dates:

11/01/2016

Rate	Fringe	Total
57.58	21.55	79.13

CLASSIFICATIONS:

Pipeline Journeyman

Effective Dates:

11/01/2016

Rate	Fringe	Total
37.16	15.74	52.90

CLASSIFICATIONS:

Pipeline Helper

ASPHALT LABORERS- NORTH Rates Expiration Date : 02/28/2018

THESE RATES APPLY IN THE FOLLOWING COUNTIES ONLY:

Bergen, Essex, Hudson, Hunterdon, Middlesex, Monmouth, Morris, Passaic, Somerset, Sussex, Union, Warren

{For apprentice rates refer to "Laborer - Heavy & General" apprentice rates in any county rate package}

The regular workday consists of 8 hours, starting at 7:00 AM or 8:00 AM.

SHIFT DIFFERENTIALS:

- Shifts must start at 3:00 PM, 4:00 PM, 12:00 AM, or 1:00 AM, to be considered shift work, except when the project owner mandates special hours of work in the job specifications, in which case those hours may be considered shift work.
- When such hours are mandated by the project owner, a shift that begins before midnight on Friday and ends on Saturday morning, or that begins at or after 8:00 PM on Sunday and ends on Monday morning may be paid at the shift differential rate.
- Shifts shall receive an additional \$2.50 per hour.

OVERTIME:

- Hours in excess of 8 per day, Monday through Friday, or outside of the regular workday that are not shift work, and all hours on Saturdays, shall be paid at time and one-half the hourly rate. All hours on Sundays and holidays shall be paid at double the hourly rate.
- Four 10-hour days may be worked, Monday through Thursday, at straight time, with Friday used as a make-up day for a day lost to inclement weather. If Friday is not a make-up day, all hours on Friday shall be paid at time and one-half the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday. Veterans Day may be substituted for the day after Thanksgiving. However, in the trading of Veterans Day for the day after Thanksgiving, if overtime is worked on Veterans Day, it shall be paid at double the hourly rate.

Hazardous Waste Work:

- where Level A, B, or C protection is required: + \$3.00/hr
- other Hazardous Waste site: + \$1.00/hr

Effective Dates:

03/01/2017

Rate	Fringe	Total
41.00	29.03	70.03

CLASSIFICATIONS:

Asphalt Foreman

Effective Dates:

03/01/2017

Rate	Fringe	Total
39.70	29.03	68.73

CLASSIFICATIONS:

Asphalt Screedman

Effective Dates:

03/01/2017

Rate	Fringe	Total
39.45	29.03	68.48

CLASSIFICATIONS:

Asphalt Raker or Lute Man

TERRITORY
ENTIRE STATE

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION

ASPHALT LABORERS- NORTH Rates Expiration Date : 02/28/2018

Effective Dates:

03/01/2017

Rate	Fringe	Total
38.75	29.03	67.78

CLASSIFICATIONS:

Asphalt Laborer

ELECTRICIAN- UTILITY WORK (NORTH) **Rates Expiration Date : 12/03/2017**

Electrician-Utility Work (North)

(For apprentice rates refer to Electrician-Utility Work (North) in any county rate package).

These rates apply to work contracted for by the following utility companies:

Public Service Electric & Gas Co. of NJ, GPU Energy, Borough of Madison Electric Department, Sussex Rural Electric Cooperative, Rockland Utilities, and Butler Municipal Electric Co.

These rates do not apply to work on substations or switching stations.

For Utility work contracted for by a utility company other than those listed above or those listed under "Electrician-Utility Work (South), see the "Outside Commercial Rates" for the county in which the jobsite is located.

* FOR OUTSIDE COMMERCIAL RATES PLEASE SEE COUNTY RATES

The regular workday is 8 hours, between 6:00 AM and 6:00 PM.

FOR EMERGENCY WORK ONLY: (emergency work is defined as work caused by storm, catastrophe, act of god, and circumstances beyond the control of the employer)-all hours of work shall be paid at double the hourly rate.

SHIFT DIFFERENTIALS:

Shift work must run for a minimum of 5 consecutive workdays.

2nd shift (between the hours of 4:30 PM and 1:00 AM): 8 hours of work + 17.3% of the regular rate, inclusive of benefits.

3rd shift (between the hours of 12:30 AM and 9:00 AM): 8 hours of work + 31.4% of the regular rate per hour, inclusive of benefits.

OVERTIME:

Hours in excess of 8 per day, or before or after the regular workday Monday through Friday, that is not shift work, and all hours on Saturday shall be paid at time and one-half the regular rate, inclusive of benefits. All hours on Sundays and holidays shall be paid at double the hourly rate, inclusive of benefits.

Four 10-hour days may worked, at straight time, between 7:00 AM and 6:30 PM, Monday through Thursday.

RECOGNIZED HOLIDAYS:

New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day and Christmas Day, or day on which they are legally observed.

Effective Dates:

12/04/2016

Rate	Fringe	Total
52.26	35.01	87.27

CLASSIFICATIONS:

Chief Lineman

Effective Dates:

12/04/2016

Rate	Fringe	Total
49.31	33.03	82.34

CLASSIFICATIONS:

Journeyman Lineman

ELECTRICIAN- UTILITY WORK (NORTH) Rates Expiration Date : 12/03/2017

Effective Dates:

12/04/2016

Rate	Fringe	Total
49.31	33.03	82.34

CLASSIFICATIONS:

Special License Operator

Effective Dates:

12/04/2016

Rate	Fringe	Total
48.81	32.70	81.51

CLASSIFICATIONS:

Transit Man

Effective Dates:

12/04/2016

Rate	Fringe	Total
47.33	31.71	79.04

CLASSIFICATIONS:

Line Equipment Operator

Effective Dates:

12/04/2016

Rate	Fringe	Total
41.42	27.75	69.17

CLASSIFICATIONS:

Dynamite Man

Effective Dates:

12/04/2016

Rate	Fringe	Total
58.18	38.98	97.16

CLASSIFICATIONS:

General Foreman

Effective Dates:

12/04/2016

Rate	Fringe	Total
56.70	37.98	94.68

CLASSIFICATIONS:

Assistant General Foreman

ELECTRICIAN- UTILITY WORK (NORTH) Rates Expiration Date : 12/03/2017

Effective Dates:

12/04/2016

Rate	Fringe	Total
55.22	36.99	92.21

CLASSIFICATIONS:

Line Foreman

Effective Dates:

12/04/2016

Rate	Fringe	Total
39.94	26.75	66.69

CLASSIFICATIONS:

Straight Light Mechanical Leader

Effective Dates:

12/04/2016

Rate	Fringe	Total
37.97	25.43	63.40

CLASSIFICATIONS:

Groundman Winch Operator

Effective Dates:

12/04/2016

Rate	Fringe	Total
37.97	25.43	63.40

CLASSIFICATIONS:

Groundman Truck Operator

Effective Dates:

12/04/2016

Rate	Fringe	Total
37.47	25.10	62.57

CLASSIFICATIONS:

Straight Light Mechanic

Effective Dates:

12/04/2016

Rate	Fringe	Total
37.47	25.10	62.57

CLASSIFICATIONS:

Line Equipment Mechanic

TERRITORY
ENTIRE STATE

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION

ELECTRICIAN- UTILITY WORK (NORTH) Rates Expiration Date : 12/03/2017

Effective Dates:

12/04/2016

Rate	Fringe	Total
32.05	21.47	53.52

CLASSIFICATIONS:

Groundman 2nd Year

Effective Dates:

12/04/2016

Rate	Fringe	Total
29.58	19.81	49.39

CLASSIFICATIONS:

Groundman 1st Year

Effective Dates:

12/04/2016

Rate	Fringe	Total
48.81	32.70	81.51

CLASSIFICATIONS:

Line Equipment Foreman

ELECTRICIAN- UTILITY WORK (SOUTH) Rates Expiration Date : 12/02/2017

Electrician-Utility Work (South)

(For apprentice rates refer to Electrician-Utility Work (South) in any county rate package).

These rates apply to work contracted for by the following utility company:

Atlantic City Electric.

These rates do not apply to work on substations or switching stations.

For utility work contracted for by a utility company other than the one listed above or those listed under "Electrician-Utility Work (North), see the "Outside Commercial Rates" for the county in which the jobsite is located.

* FOR OUTSIDE COMMERCIAL RATES PLEASE SEE COUNTY RATES

The regular workday is 8 hours, between 7:00 AM and 4:30 PM.

FOR EMERGENCY WORK ONLY: (emergency work is defined as work caused by storm, catastrophe, act of god, and circumstances beyond the control of the employer)- all hours of work shall be paid at double the hourly rate.

SHIFT DIFFERENTIALS:

Shift work must run for a minimum of 5 consecutive workdays.

When two (2) or three (3) shifts are worked the following shall apply:

1st shift (between the hours of 8:00 AM and 4:30 PM)

2nd shift (between the hours of 4:30 PM and 12:30 AM): 8 hours of work + 10% of the regular rate of pay for 7.5 hours worked.

3rd shift (between the hours of 12:30 AM and 8:00 AM): 8 hours of work + 15% of the regular rate of pay for 7 hours worked.

OVERTIME:

Hours in excess of 8 per day, or before or after the regular workday Monday through Friday, that is not shift work, and all hours on Saturday shall be paid at time and one-half the regular rate. All hours on Sundays and Holidays shall be paid double the hourly rate.

Four 10-hour days may be worked, at straight time, between 6:00 AM and 6:00 PM, Monday through Thursday with Friday used as a make-up day.

RECOGNIZED HOLIDAYS:

New Year's Day, Memorial Day, July 4th, Labor Day, Veterans' Day, Thanksgiving Day and Christmas Day or on days celebrated.

WORKING RULES:

There shall be a Foreman in charge of each work crew. No crews are to exceed twelve (12) men, including Foremen.

There shall be a General Foreman designated for transmission work when three (3) or more crews are on the same job and for distribution work where there are more than twenty (20) employees on site.

A small job crew shall consist of five (5) or less employees, one (1) of the Journeyman Linemen in the crew shall be designated as a Small Job Foreman.

Work performed from ladders and/or mechanical lift equipment shall be the work of Linemen and/or Apprentices.

On new construction, fitting and framing poles, towers or structures may be done by Journeymen and/or Apprentices. Groundmen may assist, but may not perform any work which would be performed by Linemen if assembled in the air.

There shall be a Journeyman Lineman in each pole setting, erection, grounding, wire and cable-pulling crew of more than three (3) men.

Effective Dates:

12/04/2016

Rate	Fringe	Total
58.38	45.19	103.57

CLASSIFICATIONS:

General Foreman

ELECTRICIAN- UTILITY WORK (SOUTH) Rates Expiration Date : 12/02/2017

Effective Dates:

12/04/2016

Rate	Fringe	Total
52.00	41.37	93.37

CLASSIFICATIONS:

Foreman

Effective Dates:

12/04/2016

Rate	Fringe	Total
49.26	39.74	89.00

CLASSIFICATIONS:

Small Job Foreman

Effective Dates:

12/04/2016

Rate	Fringe	Total
45.61	37.54	83.15

CLASSIFICATIONS:

Heavy Equipment Operator

Effective Dates:

12/04/2016

Rate	Fringe	Total
45.61	37.54	83.15

CLASSIFICATIONS:

Cable Splicer

Effective Dates:

12/04/2016

Rate	Fringe	Total
45.61	37.54	83.15

CLASSIFICATIONS:

Journeyman Lineman

Effective Dates:

12/04/2016

Rate	Fringe	Total
45.61	37.54	83.15

CLASSIFICATIONS:

Journeyman Welder

ELECTRICIAN- UTILITY WORK (SOUTH) **Rates Expiration Date : 12/02/2017**

Effective Dates:

12/04/2016

Rate	Fringe	Total
45.61	37.54	83.15

CLASSIFICATIONS:

Journeyman Painter

Effective Dates:

12/04/2016

Rate	Fringe	Total
36.49	32.08	68.57

CLASSIFICATIONS:

Light Equipment Operator

Effective Dates:

12/04/2016

Rate	Fringe	Total
31.93	29.37	61.30

CLASSIFICATIONS:

Groundman Truck Driver

Effective Dates:

12/04/2016

Rate	Fringe	Total
29.65	27.99	57.64

CLASSIFICATIONS:

Groundman 3rd Year

Effective Dates:

12/04/2016

Rate	Fringe	Total
27.37	26.66	54.03

CLASSIFICATIONS:

Groundman 2nd Year

Effective Dates:

12/04/2016

Rate	Fringe	Total
25.09	25.29	50.38

CLASSIFICATIONS:

Groundman 1st Year

TERRITORY
ENTIRE STATE

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION

ELECTRICIAN- UTILITY WORK (SOUTH) Rates Expiration Date : 12/02/2017

Effective Dates:

12/04/2016

Rate	Fringe	Total
20.07	22.27	42.34

CLASSIFICATIONS:

Flagman

HEAVY & GENERAL LABORERS- NEW TRANS HUDSON TUNNELS Rates Expiration Date : 02/28/2018

****THESE RATES APPLY TO CONSTRUCTION ON NEW TRANS HUDSON TUNNELS ONLY****

{For apprentice rates refer to "Laborer - Heavy & General" apprentice rates in any county rate package}

The regular workday consists of 8 hours, starting at 7:00 AM or 8:00 AM.

SHIFT DIFFERENTIALS:

- Shifts must start at 3:00 PM, 4:00 PM, 12:00 AM, or 1:00 AM, to be considered shift work, except when the project owner mandates special hours of work in the job specifications, in which case those hours may be considered shift work.
- When such hours are mandated by the project owner, a shift that begins before midnight on Friday and ends on Saturday morning, or that begins at or after 8:00 PM on Sunday and ends on Monday morning may be paid at the shift differential rate.
- Shifts shall receive an additional \$2.50 per hour.

OVERTIME:

- Hours in excess of 8 per day, Monday through Friday, or outside of the regular workday that are not shift work, and all hours on Saturdays, shall be paid at time and one-half the hourly rate. All hours on Sundays and holidays shall be paid at double the hourly rate.
- Four 10-hour days may be worked, Monday through Thursday, at straight time, with Friday used as a make-up day for a day lost to inclement weather. If Friday is not a make-up day, all hours on Friday shall be paid at time and one-half the hourly rate.

RECOGNIZED HOLIDAYS: New Year's Day, Presidents' Day, Memorial Day, July 4th, Labor Day, Presidential Election Day, Veterans' Day, Thanksgiving Day, Christmas Day. Sunday holidays observed the following Monday. Veterans Day may be substituted for the day after Thanksgiving. However, in the trading of Veterans Day for the day after Thanksgiving, if overtime is worked on Veterans Day, it shall be paid at double the hourly rate.

Hazardous Waste Work:

- where Level A, B, or C protection is required: + \$3.00/hr
- other Hazardous Waste site: + \$1.00/hr

Effective Dates:

03/01/2017

Rate	Fringe	Total
62.25	29.03	91.28

CLASSIFICATIONS:

Walking Boss & Superintendent

Effective Dates:

03/01/2017

Rate	Fringe	Total
61.80	29.03	90.83

CLASSIFICATIONS:

Heading Foreman, Shaft Foreman, Rod Foreman, Electrical Foreman, Rigging Foreman

HEAVY & GENERAL LABORERS- NEW TRANS HUDSON TUNNELS **Rates Expiration Date : 02/28/2018**

Effective Dates:

03/01/2017

Rate	Fringe	Total
61.05	29.03	90.08

CLASSIFICATIONS:

Iron Foreman, Caulking Foreman, Form Foreman, Cement Finishing Foreman, Concrete Foreman, Track Foreman, Clean-up Foreman, Grout Foreman

Effective Dates:

03/01/2017

Rate	Fringe	Total
64.80	29.03	93.83

CLASSIFICATIONS:

Blaster

Effective Dates:

03/01/2017

Rate	Fringe	Total
60.23	29.03	89.26

CLASSIFICATIONS:

Top Labor Foreman

Effective Dates:

03/01/2017

Rate	Fringe	Total
59.70	29.03	88.73

CLASSIFICATIONS:

Skilled Men (including Caulker, Powder Carrier, all other skilled men)

Skilled Men (including Miner, Drill Runner, Iron Man, Conveyor Man, Maintenance Man, Safety Miner, Rigger, Block Layer, Cement Finisher, Rod Man)

Effective Dates:

03/01/2017

Rate	Fringe	Total
59.48	29.03	88.51

CLASSIFICATIONS:

Semi-Skilled Men (including Bell or Signal Man top or bottom, Form Worker & Mover, Concrete Worker, Shaft Man, Tunnel Laborer, Caulker's Helper, all other semi-skilled)

Semi-Skilled Men (including Miner's Helper, Chuck Tender, Track Man, Nipper, Brake Man, Derail Man, Cable Man, Hose Man, Gravel Man, Form Man)

TERRITORY
ENTIRE STATE

NEW JERSEY DEPARTMENT OF LABOR AND WORKFORCE DEVELOPMENT
PREVAILING WAGE RATE DETERMINATION

HEAVY & GENERAL LABORERS- NEW TRANS HUDSON TUNNELS Rates Expiration Date : 02/28/2018

Effective Dates:

03/01/2017

Rate	Fringe	Total
58.73	29.03	87.76

CLASSIFICATIONS:

All others (including Powder Watchman, Change House Attendant, Top Laborer, Job Steward)

SECTION 00 31 24 – ENVIRONMENTAL REPORTS

PART 1 - GENERAL


- A. The data included in the Environmental Reports are for such use as the Bidder wishes to make of it. The Architect and Owner assume no responsibility for the conclusions drawn therefrom by the Bidder. The data was developed at the request of the Owner.
- B. List of Environmental Reports:
 - 1. LEW Corporation Asbestos Bulk Sampling Report dated February 23, 2015
 - 2. LEW Corporation Lead Based Paint Evaluation Report Inspection dated February 23, 2015

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 00 31 24



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1090 Bristol Road
Mountainside, NJ 07092
(908) 654-8068
(800) 783-0567
Fax 908-654-8069

ASBESTOS BULK SAMPLING REPORT

Performed At:

Wheel Park Pool House
700 South Wood Ave
Linden NJ 07036

Performed For:

USA Architects Planners & Interior Designers
20 North Doughty Ave
Somerville, NJ 08876

Prepared By:

LEW Corporation
1090 Bristol Road
Mountainside, NJ 07092

Phone (908) 654-8068
Fax (908) 654-8069

Inspection Date: 2/23/15
Project Number: 150229

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APPENDIX B	LAB SUPPORT DOCUMENTS
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APPENDIX D	FLOOR/SITE PLAN(S)

Contact Information


Site:

Site Name:	Wheel Park Pool House
Street Address:	700 South Wood Avenue, Linden NJ 07036
Year of Construction:	1966

Client:

Client Contact:	Andrew Adornato
Client Name:	USA Architects Planners & Interior Designers
Street Address:	20 North Doughty Ave., Somerville, NJ 08876
Phone Number:	(908) 722-2300

Asbestos Inspector:

Site Assessor Name:	Mark Franz
AHERA Certification #:	43368
Signature:	
Date:	2/27/15

Consultant:

Organization:	LEW Corporation
Street:	1090 Bristol Road
City, State & Zip:	Mountainside, New Jersey 07092
Phone Number:	908-654-8068
Web Address:	http://www.lewcorp.com

Laboratory:

Organization:	EMSL Analytical, Inc.
Street:	107 Haddon Avenue
City, State & Zip:	Westmont, New Jersey 08108
Phone Number:	800-220-3675

Executive Summary

On 2/23/2015, Mark Franz of LEW Corporation performed a pre-demolition survey for asbestos containing materials at 700 South Wood Avenue, Linden NJ 07036. Based on the laboratory analysis, building components considered to be asbestos containing materials (ACM) are listed in Table 1 below. The locations listed included all those locations where the material is found along with the total approximate quantity for all those areas.

Table 1: Asbestos Containing Materials 700 South Wood Avenue, Linden NJ 07036							
HA#	Sample #	Material	Location(s)	Friable	Asbestos Content	Condition	Approximate Quantities
No asbestos containing materials identified in the surveyed areas							

Introduction

LEW Corporation was retained by USA Architects Planners & Interior Designers to perform a limited survey at 700 South Wood Avenue, Linden NJ 07036 for the presence of asbestos containing building materials (ACBM). The windows and expiation joint caulk will be replaced.

On 2/23/2015 Mark Franz of LEW Corporation surveyed all accessible areas.

The scope of work for this project was limited to observing the areas indicated, bulk sampling accessible presumed asbestos containing building materials (PACBM), analyzing the samples, and giving conclusions based on the results.

Asbestos Survey Procedures

LEW Corporation followed an AHERA sampling protocol as required by Nancy Duryes of the New Jersey Department of Health and Senior Services. The asbestos survey procedure consisted of a visual evaluation of exposed building materials to locate and identify suspect ACM. The inspector looked at material type and overall condition as well as any patchwork. Materials were assessed based upon the various types of presumed homogeneity observed throughout the facility.

LEW Corporation reminds that homogeneous sampling area contains material that is uniform in texture, color, date of application, and appears identical in every other respect. Materials installed at different times belong to separate homogeneous sampling areas. The selection of homogeneous sampling areas is a subjective process. If there is any reason to suspect that materials might be different even though they appear uniform, LEW Corporation will assign them to separate homogeneous sampling areas. For example, materials in different wings of a building on different floors, or in special areas such as cafeterias, machine shops, band rooms, etc, should be assigned to separate homogeneous sampling areas unless there is a good reason to believe that the material is identical throughout.

Since destructive sampling was not conducted, we did not demolish any parts of the building to access any hidden materials. If suspect ACM that was not previously sampled is sighted during any renovations, it should be sampled by a certified inspector or assumed to be asbestos. Attention is directed to Appendix A "General Statements Concerning Asbestos Inspections".

Samples were shipped to EMSL Analytical via Federal Express. In accordance with the Emergency Adoption by the New Jersey Health and Senior Services June 5, 2006 and clarification documentation, samples were analyzed using procedure found in "Test Method-Method for Determination of Asbestos on Bulk Building Materials" EPA 600/R-93/116, July 1993. Friable material materials were analyzed utilizing using Polarized Light Microscopy (PLM). Non-friable organically bound (NOB) materials and problem matrices were gravimetrically reduced and analyzed by PLM. If the result was less than or equal to 10% asbestos, the sample is point

counted. Only when PLM analysis indicates that a sample contains 1% or less, including no asbestos, shall the sample be analyzed by Transmission Electron Microscopy (TEM).

“Wall Systems” (joint compound, tape and wallboard) were analyzed according EPA, 40 CFR Part 61, Subpart M, 55 FR 48406, Asbestos NESHAP Clarification Regarding Analysis of Multi-Layered Systems, effective on December 19, 1995. Excerpts of this clarification states:

“... This clarification basically stated that all multi-layered systems except for wall systems where joint compound was used only at the joints and nail holes must be analyzed as separate materials, and results were not allowed to be combined to determine average asbestos content (continuing the policy that dilution of an asbestos-containing material is not allowed)...”

Please find the whole EPA’s document in our Bulk Sample Report, Appendix D.

LEW Corporation reminds that PLM is not conclusive for negative results (*false negative*) in Non-Friable Organically Bounded (NOB) bulk samples, such as vinyl tile floors, roofing materials, mastics, gaskets, etc, therefore TEM methodology is strongly recommended. (mandatory in New York for asbestos confirmation in bulk sampling).

LEW Corporation follows AHERA (40 CFR Part 763, Subpart E) protocol for bulk sampling due to its stringency unless if applicable, other arrangements are requested by the client and agreed with LEW Corporation.

Table 2 below contains samples taken in this survey.
The building exterior A-wall pertains to the wall that holds the main entry roll up door, then the remaining walls are named in clockwise order.

Table 2: Samples Collected				
HA	Sample #	Material	Location	Friable
1	1A	Window Caulk	Exterior	No
1	1B	Window Caulk	Exterior	No
2	2A	Expansion Caulk	Women’s Bath	No
2	2B	Expansion Caulk	Men’s Bath	No

In *Surfacing Materials* case (like fireproofing), EPA in its guidance document: *Asbestos in Buildings, Simplified Sampling Scheme for Friable Surfacing Materials* (EPA 560/5-85-03a, October 1985, AKA “Pink Book”) recommends that 9 samples per homogenous area should be taken, with nine samples the likelihood of detecting asbestos when is present is very high, however, LEW Corporation might follow as a minimum the “AHERA’s 3,5,7 rule” which specifies taking 3 samples per each homogenous area that is 1000 SF or less, 5 samples per each

homogenous area greater than 1000 SF but less than or equal than 5000 SF, and finally 7 samples will be taken from each homogenous area that is greater than 5000 SF.

Regarding *Thermal System Insulation* case (pipes, boilers, ductworks, etc), at least three bulk samples should be taken from each homogenous area of TSI that is not assumed to be ACM. For long pipe runs or risers, more samples should be taken, especially if the piping extends to more the one *functional space* (spatially distinct units within a building which contain identifiable populations of building occupants). One bulk sample from each homogenous area of patched TSI that is not assumed to be ACM if the patched section is less than 6 linear or square feet.

For the case of *Miscellaneous Materials* (for the most part non-friable like transite or floor tiles; ceiling tiles are an exception), EPA does not recommend sampling them. Instead, they should be identified as suspect and documented as such in permanent records. Some building owners might wish to have miscellaneous materials sampled and analyzed anyway. If sampling is desired LEW Corporation will try to identify separate homogeneous areas just as it would be done for surfacing materials or thermal insulation. Then, convenience samples will be collected in inconspicuous locations.

LEW Corporation reminds that homogeneous sampling area contains material that is uniform in texture, color, date of application, and appears identical in every other respect. Materials installed at different times belong to separate homogeneous sampling areas. If there is any reason to suspect that materials might be different even though they appear uniform, LEW Corporation will assign them to separate homogeneous sampling areas. For example, materials in different wings of a building on different floors, or in special areas such as cafeterias, machine shops, band rooms, etc, should be assigned to separate homogeneous sampling areas unless there is a good reason to believe that the material is identical throughout.

In a large multi-story building (more than 10 stories), a separate homogeneous sampling area for each floor may not be necessary. If the material appears identical on every floor, several floors can be grouped into one homogeneous sampling area. LEW Corporation will not group floors if it is known that the material was applied at different times, or if there is some other reason to suspect that the material might not be homogeneous. The selection of homogeneous sampling areas is a subjective process.

ACM TYPE	SIZE OF HOMOGENEOUS AREA	MINIMUM NO. OF SAMPLES
Surfacing Materials	less than or equal to 1000 square feet (sf)	3
	greater than 1000 sf and less than 5000 sf	5
	greater than 5000 sf	7
Thermal System Insulation	areas not assumed to be ACM	3
	patched areas (<6 linear feet (lf) or 6 sf)	1
Miscellaneous Material	sufficient samples from areas that are not assumed to contain ACM	1
Non-Friable Materials	sufficient samples from areas that are not assumed to contain ACM	1

Since destructive sampling was not conducted, we did not demolish any parts of the building to access any hidden materials. If PACBM that was not previously sampled is sighted during any

renovations, it should be sampled by a certified inspector or assumed to be asbestos. Attention is directed to Appendix A "General Statements Concerning Asbestos Inspections".

Positive Laboratory Results

Table 3 below indicates the positive laboratory results. Asbestos containing material means any material that contains more than one percent asbestos by weight. Friable asbestos material means that it is capable of being crumpled, pulverized, or reduced to powder by hand pressure and normally non-friable material that during abatement process could be rendered friable as defined by EPA.

Table 3: Positive Sample Results			
Sample #	Type	Location	% Asbestos
None Identified during this survey			

Appendix A General Statement Concerning Asbestos Inspections in Buildings

- This survey did not evaluate internal boiler linings or gaskets. Before any work is scheduled on the boiler, which would affect these areas (i.e. demolition), samples of linings and gaskets should be analyzed for asbestos content.
- The roofing materials may contain asbestos. No core samples were taken due to the relation of the material to the structure. Obtain core samples before any roof renovations are undertaken, and analyze the materials in the core sample for asbestos content.
- Certain other materials such as, but not limited to, paint varnish, tape, ceramic tiles, and portland cement have been known to contain asbestos. Be aware that cutting, sanding, drilling or removal of these materials may release asbestos fibers.
- Cement pipes (roof drains, sewerage drains, etc.) may contain asbestos. Prior to any cutting, sanding, drilling, or removal of these materials bulk sample should be collected and analyzed at an accredited laboratory.

Appendix B Lab Support Documents



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077
Phone/Fax: (800) 220-3675 / (856) 786-5974
<http://www.EMSL.com> / cinnasblab@EMSL.com

EMSL Order ID: 041505144
Customer ID: LEWC50
Customer PO:
Project ID:

Attn: Lab Results
LEW Corporation
1090 Bristol Road
Mountainside, NJ 07092

Phone: (908) 654-8068
Fax: (908) 654-8069
Collected: 2/23/2015
Received: 2/24/2015
Analyzed: 2/25/2015

Proj: 150229 / Wheel Park Pool House / 700 Southwood Avenue, Linden

Summary Test Report for Asbestos Analysis in Accordance with N.J.A.C. 8:60 and 12:120 via EPA 600/R-93/116

Client Sample ID: 1A

Lab Sample ID: 041505144-0001

Sample Description: Exterior/Window caulk

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
TEM Grav. Reduction	2/25/2015	White	0.0%	100%	None Detected	

Client Sample ID: 1B

Lab Sample ID: 041505144-0002

Sample Description: Exterior/Window caulk

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
TEM Grav. Reduction	2/25/2015	White	0.0%	100%	None Detected	

Client Sample ID: 2A

Lab Sample ID: 041505144-0003

Sample Description: Women's bath/Expansion joint

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/25/2015	Gray/White	0%	100%	None Detected	

Client Sample ID: 2B

Lab Sample ID: 041505144-0004

Sample Description: Men's bath/Expansion joint

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	2/25/2015	Gray/White	0%	100%	None Detected	

Analyst(s):

Andrew Castellano PLM (2)
Ted Young TEM Grav. Reduction (2)

Reviewed and approved by:

Benjamin Ellis, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. This test report must not be used to claim product endorsement by NVLAP or any agency of the U.S. Government. EMSL bears no responsibility for sample collection activities or analytical method limitations. The laboratory is not responsible for the accuracy of results when requested to physically separate and analyze layered samples. PLM alone is not consistently reliable in detecting asbestos in floor coverings and similar NOBs.

Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ NVLAP Lab Code 101048-0, AIHA-LAP, LLC-IHLAP Lab 100194, NYS ELAP 10872, NJ DEP 03036

Initial report from: 02/25/2015 09:47:24



EMSL ANALYTICAL, INC.
LABORATORY • PRODUCTS • TRAINING

Asbestos Bulk Building Material Chain of Custody

EMSL Order Number (Lab Use Only):

041505144

Cinnaminson, NJ 08077
PHONE: 1-800-220-3675
FAX: (856) 786-5974

Company : LEW Corporation		EMSL-Bill to: <input checked="" type="checkbox"/> Same <input type="checkbox"/> Different If Bill to is Different note instructions in Comments**	
Street: 1090 Bristol Rd		Third Party Billing requires written authorization from third party	
City: Mountainside	State/Province: NJ	Zip/Postal Code: 07092	Country: United States
Report To (Name): M. Franz		Telephone #: 9086548068	
Email Address: labresults@lewcorp.com		Fax #: 9086548069	Purchase Order:
Project Name/Number: 150 229	Please Provide Results: <input type="checkbox"/> Fax <input checked="" type="checkbox"/> Email <input type="checkbox"/> Mail		
U.S. State Samples Taken: NJ	CT Samples: <input type="checkbox"/> Commercial/Taxable <input type="checkbox"/> Residential/Tax Exempt		

Turnaround Time (TAT) Options* - Please Check

3 Hour 6 Hour 24 Hour 48 Hour 72 Hour 96 Hour 1 Week 2 Week

*For TEM Air 3 hr through 6 hr, please call ahead to schedule. *There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.

PLM - Bulk (reporting limit)	TEM - Bulk
<input checked="" type="checkbox"/> PLM EPA 600/R-93/116 (<1%)	<input type="checkbox"/> TEM EPA NOB - EPA 600/R-93/116 Section 2.5.5.1
<input type="checkbox"/> PLM EPA NOB (<1%)	<input type="checkbox"/> NY ELAP Method 198.4 (TEM)
Point Count <input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1000 (<0.1%)	<input type="checkbox"/> Chatfield Protocol (semi-quantitative)
Point Count w/Gravimetric <input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1000 (<0.1%)	<input type="checkbox"/> TEM % by Mass - EPA 600/R-93/116 Section 2.5.5.2
<input type="checkbox"/> NIOSH 9002 (<1%)	<input type="checkbox"/> TEM Qualitative via Filtration Prep Technique
<input type="checkbox"/> NY ELAP Method 198.1 (friable in NY)	<input type="checkbox"/> TEM Qualitative via Drop Mount Prep Technique
<input type="checkbox"/> NY ELAP Method 198.6 NOB (non-friable-NY)	
<input type="checkbox"/> OSHA ID-191 Modified	Other
<input type="checkbox"/> Standard Addition Method	<input checked="" type="checkbox"/> NOBs - TEM Only

Check For Positive Stop - Clearly Identify Homogenous Group Date Sampled: 2/23/15

Samplers Name: Mark Franz Samplers Signature: *Mark Franz*

Sample #	HA #	Sample Location	Material Description
1A	1	Exterior	Window caulk
1B	1	↓	↓
2A	2	Women's Bath	Expansion Joint
2B	2	Men's Bath	

RECEIVED
 EMSL
 CINNAMINSON, NJ
 FEB 24 AM 10:32

Client Sample #(s): 1A → 2B Total # of Samples: 4

Relinquished (Client): *Mark Franz* Date: 2/23/15 Time: 5pm

Received (Lab): *AKL EMSL FX* Date: 2/24/15 Time: 1000

Comments/Special Instructions:

Site address: 700 South Wood Ave, Linden

Wheel Park Pool House

4

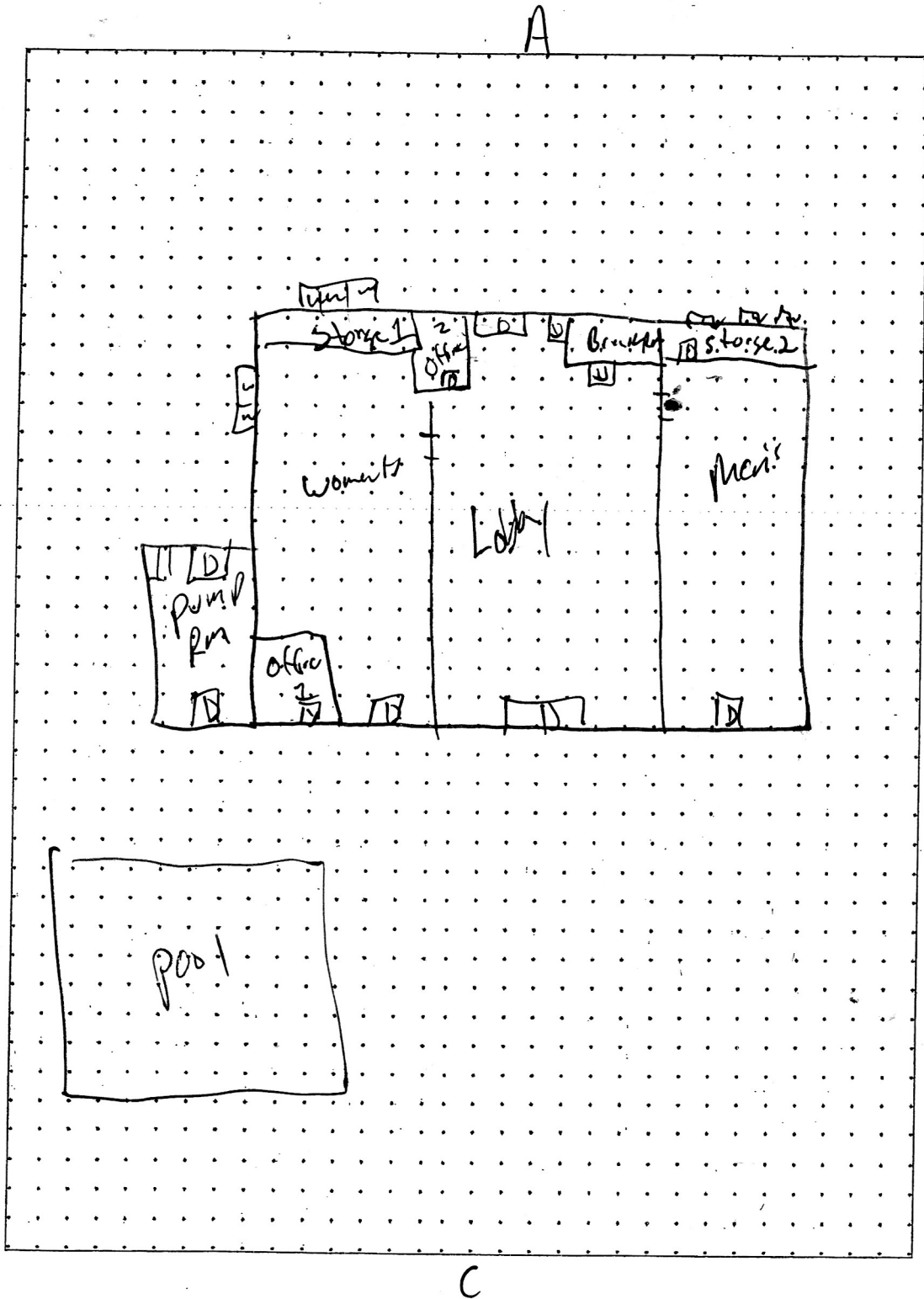
Appendix C Photograph(s)

LEW Corporation is not responsible for the quality of the pictures, nor the clarity, content or the detail.

Appendix D Floor/Site Plan(s)

Drawings not to scale.

Site: Wheel Park Pool House





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1090 Bristol Road
Mountainside, NJ 07092
(908) 654-8068
(800) 783-0567
Fax 908-654-8069

LEAD-BASED PAINT EVALUATION REPORT INSPECTION

Performed At:

Wheel Park Pool House
700 South Wood Ave
Linden NJ 07036

Performed For:

USA Architects Planners & Interior Designers
20 North Doughty Ave
Somerville, NJ 08876

Prepared By:

LEW Corporation
1090 Bristol Road
Mountainside, NJ 07092

Phone (908) 654-8068
Fax (908) 654-8069

Inspection Date: 2/23/2015
Project Number: 150229

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Contact Information


Site

Name	Wheel Park Pool House
Street Address	700 South Wood Avenue, Linden NJ 07036
Year Of Construction	Pre 1978

Client

Name	USA Architects Planners & Interior Designers
Contact	Andrew Adornato
Street	20 North Doughty Ave., Somerville, NJ 08876
Phone Number	(908) 722-2300

Site Evaluator

Site Evaluator	Mark Franz
Certification Number	NJDHSS 003265
Instrumentation	RMD LPA-1 Serial #1169
Signature	
Date	February 27, 2015

Firm

Organization:	LEW Corporation
Certification #:	NJDCA 00015-E
Street:	1090 Bristol Road
City, State & Zip:	Mountainside, New Jersey 07092
Phone Number:	908-654-8068
Web Address:	www.lewcorp.com

Background

The above mentioned Client is requesting a Proposal for a site survey of the Wheeler Park Pool House, which is approximately 5,00 SqFt. The site survey is to test for Asbestos in the building caulking and Lead Paint in the exterior and interior.

LEW Corporation proposes to perform a site survey for the presence of lead paint in the exterior and interior at the Wheel Park Pool House. We will also be testing the building caulking for the presence of asbestos.

Executive Summary

On 2/23/2015 Mark Franz, of LEW Corporation performed a lead-based paint inspection at Wheel Park Pool House located at 700 South Wood Avenue, Linden NJ 07036. The entire interior and exterior was inspected. Of the 126 readings taken, 10 were positive for lead-based paint. The lead-based paint inspection sampling protocol that was applied follows "Inspections in Single-Family Housing" Chapter 7 of the HUD Guidelines (1997 revision) and the protocol as referenced in USEPA 40 CFR Part 745.227(b). See Appendix B Lead Paint Inspection Report for the complete set of X-Ray Fluorescence data.

The building interior A-Wall pertains to the wall that holds the main entry roll up door. The building exterior A-Wall pertains to the side of the building that faces the street address (Main entry roll up door).

The tables below indicate the location of the lead-based paint found. Each positive reading applies to all similar components in the same room equivalent (room, hall, stairwell, building exterior, etc.) For a lead-based paint free certification, the lead must be stripped or the leaded component replaced and confirmation achieved. Enclosure and encapsulation are not acceptable methods for a lead-based paint free certification.

Interior Components with Lead Based Paint

Room Equivalent	Component	Substrate	Value(mg/cm ²)
Pump Room	Door Lintel	Metal	1.7
Pump Room	Stair Railing	Metal	4.4
Pump Room	Column	Metal	3.1
Office 1	Pass Thru Roll Up Door	Metal	1.5
Lobby	Door	Metal	1.5
Lobby	Door Frame	Metal	3.6

Exterior Components with Lead Based Paint

Room Equivalent	Component	Substrate	Value(mg/cm ²)
Exterior	Door	Metal	2.2
Exterior	Door Frame	Metal	1.4
Exterior	Door	Metal	2.1
Exterior	Door Frame	Metal	2.3

Paint Chips (if applicable)

Sample number	Location	Measurement	Actionable
NONE COLLECTED			

EPA 40 CFR 745.227(h) states lead-based paint is present on any surface that is tested and found to contain lead equal to or in excess of 1.0 milligrams per square centimeter or equal to or in excess of 0.5% by weight. Local thresholds may be lower than this Federal standard.

Regulatory Requirements

Required Disclosure

A summary of this lead-based paint evaluation report must be provided to new lessees (tenants). A complete copy of this report must be provided to purchasers and owners of this property and it must be made available to new tenants under federal law (24 CFR PART 35 AND 40 CFR PART 745) before they become obligated under a lease or sales contract. Landlords (lessors) and sellers are also required to distribute an educational pamphlet approved by the U.S. Environmental Protection Agency and include standard warning language in their leases or sales contracts to ensure that parents have the information they need to protect their children from lead-based paint hazards.”

Should the recipient of this report receive federal subsidy they are responsible to comply with all requirements of 24 CFR Part 35 Requirements for the Notification, Evaluation and Reduction of Lead-Based Paint Hazards in Federally Owned Residential Property and Housing Receiving Federal Assistance; Final Rule which, are applicable to the type of program they are participating in and the dollar amount of subsidy being received. If this property or any of its tenants receives financial federal assistance, the results of the evaluation or hazard reduction activities must be provided by the designated party (client) to the owner of the referenced property and the occupants within 15 calendar days of the date when the designated party receives this report, or makes the presumption that lead-based paint hazards do exist.

Required Training for Workers

Should the lead-based paint and lead hazard reduction activities be part of a program which receives federal subsidy or a New Jersey multifamily building, all persons performing “Interim Controls” or “Standard Treatments” must be trained in accordance with 29 CFR 1926.59 and be supervised by an individual who successfully completed one of the following courses:

1. A lead-based paint abatement supervisors course accredited in accordance with 40 CFR 745.225
2. A lead-based paint abatement worker course accredited in accordance with 40 CFR 745.225
3. The lead-based paint Maintenance Training Program, “Work Smart, Work Wet, and Work Clean to Work Lead Safe”, prepared by the National Environmental Training Association for EPA and HUD
4. “The Remodeler’s and Renovator’s Lead-Based Paint Training Program,” prepared by HUD and the National Association of the Remodeling Industry
5. Another course approved by HUD for this purpose after consultation with EPA.

In accordance with Section 35.1340 all Lead-Based Paint and Lead Hazard reduction activities, which are not exempt (see regulations) require Lead Dust Wipe Clearance testing by a 1) certified lead inspector, 2) certified risk assessor or 3) a dust wipe sampling technician whose work is reviewed by a certified risk assessor.

If a renovation at the property is to occur, all work should comply with 40 CFR 745 Subpart E-Residential Property Renovation.

Controlling Lead-Based Paint

There are different options available for controlling lead-based paint. Each option has its own associated costs and benefits both short and long term. In most cases, a combination of the options can be implemented to reduce the possibility of lead contamination. LEW Corporation strongly suggests that each option is thoroughly contemplated before beginning any activity.

Components that are found to be positive for lead-based paint should be checked for deterioration. Lead-based paint in deteriorated condition is considered a paint-lead hazard. Those components should be address as soon as possible using lead safe work practices at a minimum. However, if any components are found to test positive for lead based paint, they should be considered for future component removal or paint stripping.

Abatement for Lead-Based Paint Free Certification

Component Removal

Component removal is a permanent solution to the issue of potential exposure of lead. It requires taking the old lead-based painted component out and replacing it with a new non-lead painted component. The cost associated with this option depends mostly on the cost of the replacement component. Since labor is most often the more costly aspect of controlling lead issues, many owners choose component removal over more labor intensive methods. Components often chosen for removal are wood trim, windows, most doors, and exterior railings. Plaster and drywall ceilings and walls, fire rated doors, and wood porch components should also be considered.

Paint Stripping

Paint stripping is a permanent solution to the issue of potential exposure of lead. The paint can be removed either in-place or by an off-site processing facility. In-place removal can be mechanical or chemical. In-place paint stripping has the issue of proper disposal of the hazardous waste generated.

Mechanical stripping scrapes the paint off the substrate. Most times dry scraping is prohibited, but sanding or scraping can be done in conjunction with engineering controls to reduce airborne and settled lead dust. Power tools used to remove the paint must be equipped with a HEPA filtered shroud. Wetting a surface and hand scraping is also permitted. The components most often chosen for hand scraping are window and door jambs. Power tools are better equipped to handle larger surface areas.

Chemical stripping in-place uses strong chemicals to soften the paint for easier removal from the substrate. The chemicals are either very acidic or very basic, so proper training and protection for the worker is imperative. Generally, the chemicals must remain in-place overnight, so maintaining a secure worksite separate from occupants is mandatory.

Off site facilities use much stronger chemicals to remove the lead-based paint from the component. Components often chosen for off-site paint removal are intricate metal pieces. Sometimes this method is used for intricate wood work, but the stronger chemicals soften the wood and can drive lead into the wood while removing the paint.

Abatement to Control Lead-Based Paint Hazards

Enclosure

Enclosure is the option of sealing off the lead-based painted component by sealing it in with another building material. Such materials would include, but are not limited to; sheet rock, paneling, vinyl or aluminum siding and radiator covers, etc. Enclosure is not a permanent solution; and, if the enclosure material ever becomes disturbed, the lead-based paint is exposed. Depending on the building material used for enclosure, this can be an affordable option. Depending on the enclosure option taken it is possible that no lead abatement procedures need to be followed; but, of course, consult a professional before beginning.

Encapsulation

Encapsulation is the process of using an encapsulant-type of product that is applied over the lead-painted component. There are currently many different types of encapsulants on the market, and they come in many different forms. Some encapsulants are like stucco, some are like a two-part epoxy, some are like a heavy latex paint, and some are like a cement or plaster. Different types of encapsulants have different life expectancies and some come in different colors. None of the encapsulants are guaranteed forever, although some do come with a life or 10 to 20 year guarantee. To be considered a true lead abatement method according to the American Society of Testing Materials (ASTM) the encapsulant must meet their longevity criteria of at a minimum twenty (20) years. This option is not a permanent solution; and if the encapsulant ever becomes disturbed, the lead-based paint is exposed. Encapsulation is typically the least expensive option and has currently been accepted at the federal level as a viable and affordable option for lead abatement or in-place management, assuming the encapsulant meets the ASTM requirements for encapsulants.

Interim Control Options

An In-Place Management program is an on going set of measures designed to temporarily reduce human exposure or possible exposure and accessibility to lead-based paint hazards. Such measures include specialized cleaning, repairs, maintenance, paint stabilization, painting, temporary containment, and management and resident education programs. Monitoring, conducted by owners, and reevaluations conducted by professionals, are integral elements of interim controls. Interim controls include dust removal; paint film stabilization; treatment of friction and impact surfaces; installation of soil coverings, such as grass or sod; ground covering plants so as not to allow for easy accessibility, and land-use controls

Unlike Abatement, Interim Controls are considered to be temporary repairs and are not to be used as permanent solutions to lead-based hazards. Interim controls strategies are a very effective and cost saving program to substantially reduce the potential for lead poisoning. However, interim controls programs will only work and prove effective if reevaluation is continually performed. Reevaluation is the combination of a visual assessment and collection of environmental samples by a certified risk assessor on an on-going basis to determine if a previously implemented lead-based hazard control measure is still effective and if the dwelling remains lead-safe.

LEW Corporation strongly suggests that HEPA vacuuming and Lead-Specific Cleaning detergent/LEDIZOLV wash downs should continue on a routine basis and a continual visual inspection/assessment and sample collection should be performed at least every 1 to 3 years, or until the dust levels continually remain below actionable levels.

Procedures & Methodology

Location Conventions

When reviewing Appendix A "Floor Plan" and Appendix B "Lead-Based Paint Evaluation Report", you will notice that the letters A, B, C, and D are used to identify the location of specific components. The key to correct orientation is the location of the "A" wall, which is depicted on the floor plan. The "B" wall, "C" wall, and "D" wall run clockwise from the "A" wall. The Lead-Based Paint Evaluation Report lists this information under the "Wall" column. The "Location" column uses numbering of replicated components starting with "1" at left and continuing sequentially to right respectively to describe the location of the component while facing the wall identified.

Paint Testing

X-Ray Fluorescence

X-Ray Fluorescence (XRF) paint testing is performed to detect the presence of lead on painted surfaces. The XRF instrument is state-of-the art equipment. XRF testing is usually the preferred method of testing, because it is non-destructive, quantitative and can be performed on the spot with acceptable accuracy. LEW Corporation's evaluators follow the manufacturer's suggested use and the Performance Characteristic Sheet of the XRF instrument being used. The results of the XRF testing are the basis for drawing conclusions and making recommendations in the report.

All LEW Corporation's evaluators follow 40 CFR 745 and the HUD Guidelines for testing lead using an XRF instrument. All federal, state and city regulations are followed when applicable. The evaluator will test one of each and every different type of testing combination (component) in each room being surveyed. Each XRF reading is assigned an exclusive sample reference number and a measurement that is stored in the instrument. Each sample reference number location is logged on a PDA for future reference, testing location, and report generation. The above described testing format is followed unless otherwise not practical or if the evaluator's judgment decides to test in a different systematic approach.

The federal level for lead based paint testing is 1.0 mg/cm². It should be noted that detected lead levels below current levels still could create lead dust or lead-contaminated soil hazards if the paint is turned into dust by abrasion, scraping, or sanding leading to possible elevated blood lead levels. Lead poisoning is a cumulative affect. Should a child or an adult inhale or ingest sufficient quantities of low concentrations of leaded paint, dust, or soil, it will accumulate in the body's systems and could eventually cumulate to an elevated blood level of concern.

Substrate Correction

X-Ray Fluorescence (XRF) readings are sometimes subject to systematic biases as a result of interference from substrate material beneath the paint. The magnitude and direction of bias depends on the substrate, the specific XRF instrument being used, and other factors such as temperature and humidity. Results can be biased in either the positive or negative direction and may be quite high. Consequently, the XRF Performance Characteristic Sheet is consulted to determine the requirements for LPA-1 XRF substrate correction conditions.

XRF results are corrected for substrate bias by subtracting a correction value determined by randomly selecting two housing units to be used to collect substrate measurements for all substrates within the development that need corrections and use the results from those two units to perform substrate correction calculations in all tested units within the development or building. The substrate correction value is obtained by using the specific XRF instrument(s) that is/are being used at the site. The correction value is an average of six XRF readings taken over red NIST SRM (1.02mg/cm²) paint film, with three readings taken from two test locations that have been scraped visually clean of their paint coating. The red NIST SRM 1.02mg/cm² is then subtracted from the average of the six readings; the result is the Substrate Correction value. The substrate correction value is then subtracted from the XRF measurement on the specific testing combinations that falls within the substrate correction range according to the Performance Characteristic Sheets requirements. According to the Performance Characteristic Sheet for the LPA-1 XRF instrument once a substrate correction value is applied should it be needed the final Lead-Based Paint measurement should be either Positive or Negative.

Calibration Check Readings

In addition to the manufacturer's recommended warm up and quality control procedures, LEW Corporation collects quality control readings as recommended in the HUD Guidelines. Quality control for XRF instrumentation instruments involves readings to check calibration.

For each XRF instrument, one set of XRF calibration check readings are recommended at least every four hours. The first is a set of three nominal-time or source decay corrected time XRF calibration check readings to be taken before the inspection begins for the day. The second occurs either after the day's inspection work has been completed, or at least every four hours, whichever occurs first. LEW Corporation's XRF calibration check readings are taken on the Standard Reference Material (SRM) paint film nearest to 1.0 mg/cm² within the National Institute of Standards and Technology (NIST) SRM Used or the XRF manufacturer's factory supplied SRM film. Three readings are collected on the SRM. The average of the three readings on the SRM must be within the acceptable plus and minus tolerances for proper calibration as detailed in the Performance Characteristic Sheet (PCS). All calibration checks are taken with the SRM film positioned at least several inches away from any potential source of lead (LPA-1 XRF only reads 3/8" deep lead).

Three readings are taken each time calibration check readings are made. The readings are taken using the nominal time that is specified in the LPA-1's Performance Characteristic Sheet. The average of the readings are compared to the known value and if the average value is within the acceptable calibration check tolerance specified in the LPA-1's XRF Performance Characteristic Sheet the instrument is considered in control. If the average readings are not within the calibration check tolerance the instrument is not used until the instrument is brought back into control.

Paint Chips

Paint chips are taken for confirmation of lead based paint, or as a solution to inconclusive measurement recorded by the use of XRF testing. Paint chips are typically not taken unless absolutely necessary. On components that are right on the XRF action level, a paint chip is the only other way to get a conclusive determination as to the level of lead in the paint and if the component should be considered as actionable or not. Paint chips, when taken, are usually taken from an inconspicuous areas and tape and/or paint is placed over the removed paint location.

When the inspector collects paint-chip samples for analysis, they are analyzed by a laboratory recognized under the EPA's National Lead Laboratory Accreditation Program (NLLAP). Paint-chip samples contain all layers of paint (not just peeled layers) and must always include the bottom layer. If results will be reported in mg/cm², including a small amount of substrate with the sample will not significantly bias results. Substrate material should not, however, be included in samples reported in weight percent. Paint from 4 square inches (25 square centimeters) should provide a sufficient

quantity for laboratory analysis. Smaller surface areas may be used, if the laboratory indicates that a smaller sample is acceptable.

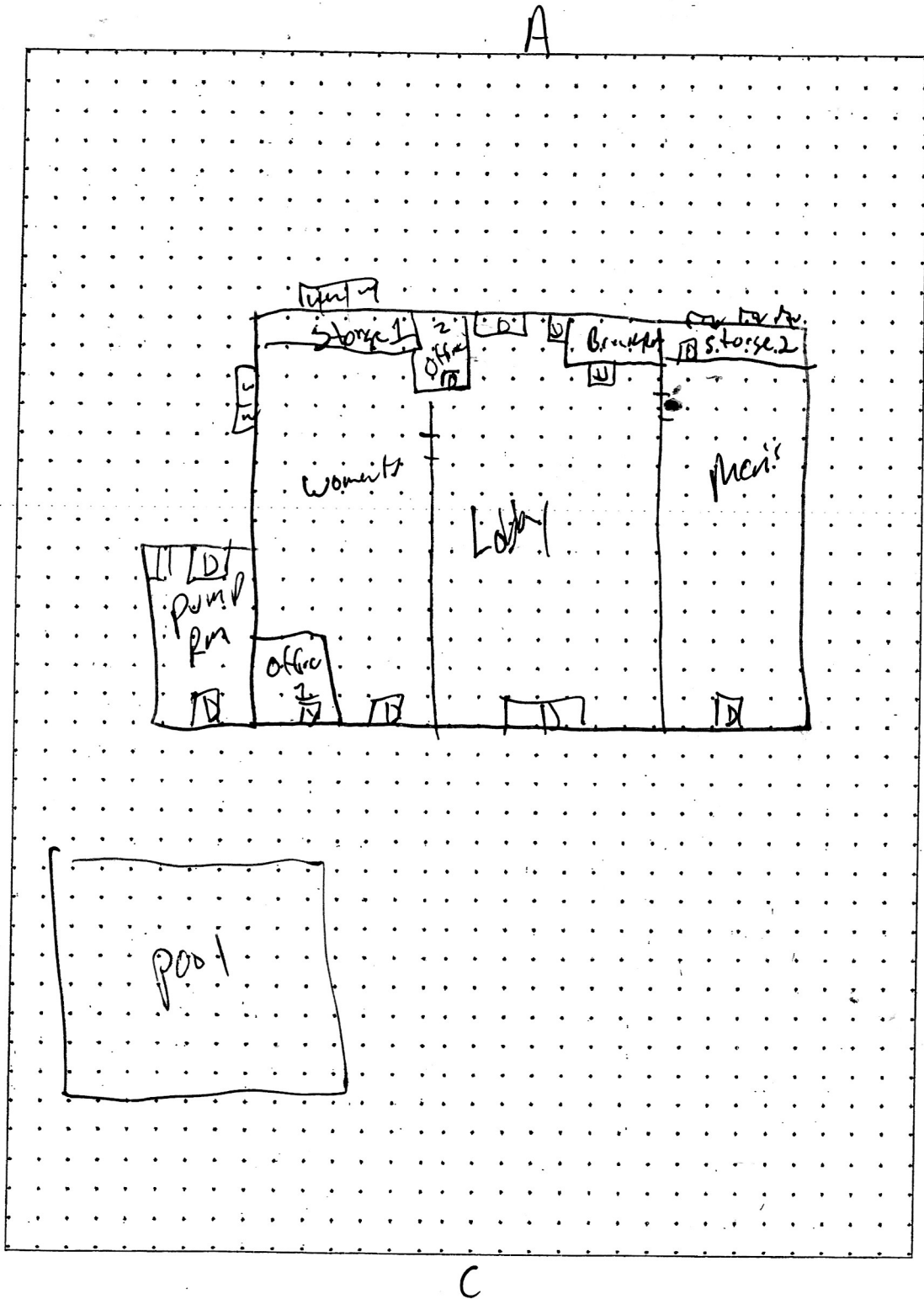
Current action levels for lead in paint:

PAIN CHIP ACTION LEVELS BY PERCENT WEIGHT	0.5% OR 5000 parts per million
PAIN CHIP ACTION LEVELS BY WEIGHT PER AREA	Same as XRF action levels, may be state dependent

Appendix A

Floor Plan

Site: Wheel Park Pool House



Appendix B Lead-Based Paint Evaluation Report

LEAD-BASED PAINT EVALUATION REPORT

700 South Wood Ave Linden NJ

INSPECTION DATE: 2/23/2015

REPORT NUMBER: S#1169 - 2/23/2015 08:56

INSTRUMENT TYPE: R M D
MODEL LPA-1
XRF TYPE ANALYZER
Serial Number: 1169

ACTION LEVEL: 1.0 mg/cm²

CORRECTION VALUE: N/A

STATEMENT: LEW Corporation is responsible only for the areas tested as of the date of inspection. Areas not tested in this report may not be assured as being lead-safe. Always consult with LEW Corporation.

SEQUENTIAL REPORT OF LEAD PAINT INSPECTION

Inspection Date: 2/23/2015 Area Inspected: 700 South Wood Ave Linden NJ
 Action Level: 1.0 mg/cm2
 Report Number: S#1169 - 2/23/2015 08:56
 Total Readings: 126
 Unit Started: 2/23/2015 - 08:56
 Unit Finished: 2/23/2015 - 12:01

Read No.	Rm	Room Name	Wall	Loc.	Structure	Member	Substrate	Lead (mg/cm2)	Mode	Paint Condition	Cause of Deterioration	Paint Color
1					Calibration			1.1	TC			
2					Calibration			0.8	TC			
3					Calibration			0.8	TC			
4	1	Building	A	1	Door	---	Metal	-0.1	QM	N/A	N/A	None
5	1	Building	A	1	Door	Buck	Metal	-0.1	QM	N/A	N/A	None
6	1	Building	A	1	Fascia	N/A	Other	-0.1	QM	N/A	N/A	None
7	1	Building	A	1	Gutter	N/A	Metal	-0.2	QM	N/A	N/A	None
8	1	Building	A	1	Wall	N/A	Concrete	0.0	QM	N/A	N/A	None
9	1	Building	A	1	Sign	N/A	Metal	0.2	QM	N/A	N/A	None
10	1	Building	A	1	Down Spout	N/A	Metal	-0.2	QM	N/A	N/A	None
11	1	Building	A	1	Window	Sill	Wood	0.1	QM	N/A	N/A	None
12	1	Building	A	1	Window	Frame	Wood	-0.1	QM	N/A	N/A	None
13	1	Building	D	1	Wall	N/A	Wood	-0.1	QM	N/A	N/A	None
14	1	Building	D	2	Door	---	Metal	2.2	QM	N/A	N/A	None
15	1	Building	D	1	Door	Frame	Metal	1.4	QM	N/A	N/A	None
16	1	Building	D	1	Column	N/A	Metal	-0.1	QM	N/A	N/A	None
17	1	Building	D	1	Column	N/A	Metal	-0.1	QM	N/A	N/A	None
18	1	Building	D	2	Door	Fascia	Wood	-0.1	QM	N/A	N/A	None
19	1	Building	D	2	Soffit	N/A	Wood	0.0	QM	N/A	N/A	None
20	1	Building	B	1	Wall	N/A	Concrete	-0.1	QM	N/A	N/A	None
21	1	Building	B	1	Door	---	Metal	-0.1	QM	N/A	N/A	None
22	1	Building	B	1	Door	Buck	Metal	0.0	QM	N/A	N/A	None
23	1	Building	B	1	Window	Sill	Wood	0.0	QM	N/A	N/A	None
24	1	Building	B	1	Window	Frame	Wood	0.1	QM	N/A	N/A	None
25	1	Building	C	1	Door	---	Metal	-0.1	QM	N/A	N/A	None
26	1	Building	C	1	Door	Buck	Metal	0.0	QM	N/A	N/A	None

SEQUENTIAL REPORT OF LEAD PAINT INSPECTION

Inspection Date: 2/23/2015 Area Inspected: 700 South Wood Ave Linden NJ
 Action Level: 1.0 mg/cm2
 Report Number: S#1169 - 2/23/2015 08:56
 Total Readings: 126
 Unit Started: 2/23/2015 - 08:56
 Unit Finished: 2/23/2015 - 12:01

Read No.	Rm	Room Name	Wall	Loc.	Structure	Member	Substrate	Lead (mg/cm2)	Mode	Paint Condition	Cause of Deterioration	Paint Color
27	1	Building	C	1	Wall	N/A	Concrete	0.2	QM	N/A	N/A	None
28	1	Building	C	2	Door	---	Metal	2.1	QM	N/A	N/A	None
29	1	Building	C	2	Door	Frame	Metal	2.3	QM	N/A	N/A	None
30	1	Building	C	2	Door	Step	Concrete	0.0	QM	N/A	N/A	None
31	1	Building	C	1	Wall	N/A	Concrete	0.0	QM	N/A	N/A	None
32	1	Building	C	1	Pass Through	N/A	Metal	0.5	QM	N/A	N/A	None
33	1	Building	C	1	Pass Through	N/A	Concrete	0.4	QM	N/A	N/A	None
34	1	Building	D	1	Wall	N/A	Concrete	-0.1	QM	N/A	N/A	None
35	2	Pump Room	A	1	Door	---	Metal	-0.2	QM	N/A	N/A	None
36	2	Pump Room	A	1	Door	Buck	Metal	-0.2	QM	N/A	N/A	None
37	2	Pump Room	A	1	Door	Lintel	Metal	1.7	QM	N/A	N/A	None
38	2	Pump Room	D	1	I Beam	N/A	Metal	0.4	QM	N/A	N/A	None
39	2	Pump Room	D	1	Closet	Door	Metal	-0.1	QM	N/A	N/A	None
40	2	Pump Room	D	1	Closet	Buck	Metal	0.3	QM	N/A	N/A	None
41	2	Pump Room	D	1	Closet	Shelf	Wood	0.0	QM	N/A	N/A	None
42	2	Pump Room	D	1	Floor	N/A	Concrete	0.2	QM	N/A	N/A	None
43	2	Pump Room	D	1	Wall	N/A	Concrete	0.3	QM	N/A	N/A	None
44	2	Pump Room	D	1	Ceiling	N/A	Wood	0.3	QM	N/A	N/A	None
45	2	Pump Room	D	1	Ceiling	N/A	Wood	0.1	QM	N/A	N/A	None
46	2	Pump Room	D	1	Stair	Treads	Concrete	-0.3	QM	N/A	N/A	None
47	2	Pump Room	D	1	Stair	Railing	Metal	4.4	QM	N/A	N/A	None
48	2	Pump Room	A	1	Wall	N/A	Concrete	-0.2	QM	N/A	N/A	None
49	2	Pump Room	A	1	Electric Panel	N/A	Metal	0.0	QM	N/A	N/A	None
50	2	Pump Room	B	1	Wall	N/A	Concrete	0.2	QM	N/A	N/A	None
51	2	Pump Room	C	1	Wall	N/A	Concrete	0.2	QM	N/A	N/A	None
52	2	Pump Room	C	1	Column	N/A	Metal	3.1	QM	N/A	N/A	None

SEQUENTIAL REPORT OF LEAD PAINT INSPECTION

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 Unit Started: 2/23/2015 - 08:56
 Unit Finished: 2/23/2015 - 12:01

Read No.	Rm	Room Name	Wall	Loc.	Structure	Member	Substrate	Lead (mg/cm2)	Mode	Paint Condition	Cause of Deterioration	Paint Color
53	2	Pump Room	C	1	Pipe	N/A	Metal	-0.2	QM	N/A	N/A	None
54	3	Office 1	C	1	Door	---	Metal	-0.1	QM	N/A	N/A	None
55	3	Office 1	C	1	Door	Buck	Metal	0.0	QM	N/A	N/A	None
56	3	Office 1	C	1	Pass Through	N/A	Metal	1.5	QM	N/A	N/A	None
57	3	Office 1	C	1	Pass Through	N/A	Wood	0.0	QM	N/A	N/A	None
58	3	Office 1	C	1	Wall	N/A	Concrete	-0.1	QM	N/A	N/A	None
59	3	Office 1	B	1	Wall	N/A	Concrete	-0.1	QM	N/A	N/A	None
60	3	Office 1	A	1	Wall	N/A	Concrete	0.2	QM	N/A	N/A	None
61	3	Office 1	D	1	Wall	N/A	Concrete	0.1	QM	N/A	N/A	None
62	3	Office 1	D	1	Pipe	N/A	Metal	0.0	QM	N/A	N/A	None
63	3	Office 1	D	1	Baseboard	N/A	Wood	0.4	QM	N/A	N/A	None
64	3	Office 1	D	1	Floor	N/A	Concrete	-0.1	QM	N/A	N/A	None
65	3	Office 1	D	1	Ceiling	N/A	Drywall	0.4	QM	N/A	N/A	None
66	3	Office 1	A	1	Cabinets	Frame	Metal	0.0	QM	N/A	N/A	None
67	4	Women's Bath	C	1	Door	---	Metal	-0.1	QM	N/A	N/A	None
68	4	Women's Bath	C	1	Door	Buck	Metal	0.1	QM	N/A	N/A	None
69	4	Women's Bath	C	1	Wall	N/A	Concrete	-0.1	QM	N/A	N/A	None
70	4	Women's Bath	D	1	Wall	N/A	Concrete	0.0	QM	N/A	N/A	None
71	4	Women's Bath	C	1	Stall	Door	Metal	-0.2	QM	N/A	N/A	None
72	4	Women's Bath	C	1	Stall	Wall	Metal	0.2	QM	N/A	N/A	None
73	4	Women's Bath	D	1	Wall	N/A	Concrete	0.0	QM	N/A	N/A	None
74	4	Women's Bath	D	1	Cabinets	Frame	Metal	0.0	QM	N/A	N/A	None
75	4	Women's Bath	D	1	Column	N/A	Concrete	0.5	QM	N/A	N/A	None
76	4	Women's Bath	A	1	Wall	N/A	Concrete	-0.2	QM	N/A	N/A	None
77	4	Women's Bath	B	1	Wall	N/A	Concrete	-0.1	QM	N/A	N/A	None
78	5	Office 2	C	1	Door	---	Metal	0.0	QM	N/A	N/A	None

SEQUENTIAL REPORT OF LEAD PAINT INSPECTION

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Read No.	Rm	Room Name	Wall	Loc.	Structure	Member	Substrate	Lead (mg/cm2)	Mode	Paint Condition	Cause of Deterioration	Paint Color
79	5	Office 2	C	1	Door	Buck	Metal	0.5	QM	N/A	N/A	None
80	5	Office 2	C	1	Wall	N/A	Concrete	-0.1	QM	N/A	N/A	None
81	5	Office 2	D	1	Wall	N/A	Concrete	-0.1	QM	N/A	N/A	None
82	5	Office 2	A	1	Wall	N/A	Concrete	-0.4	QM	N/A	N/A	None
83	5	Office 2	B	1	Wall	N/A	Concrete	-0.1	QM	N/A	N/A	None
84	5	Office 2	B	1	Ceiling	N/A	Drywall	-0.1	QM	N/A	N/A	None
85	6	Storage Room 1	B	1	Door	---	Metal	-0.1	QM	N/A	N/A	None
86	6	Storage Room 1	B	1	Door	Buck	Metal	0.0	QM	N/A	N/A	None
87	6	Storage Room 1	B	1	Wall	N/A	Concrete	0.1	QM	N/A	N/A	None
88	6	Storage Room 1	C	1	Wall	N/A	Concrete	-0.1	QM	N/A	N/A	None
89	6	Storage Room 1	D	1	Wall	N/A	Concrete	-0.3	QM	N/A	N/A	None
90	6	Storage Room 1	A	1	Window	Frame	Wood	0.1	QM	N/A	N/A	None
91	6	Storage Room 1	A	1	Wall	N/A	Concrete	0.0	QM	N/A	N/A	None
92	6	Storage Room 1	D	1	Electric Panel	N/A	Metal	0.2	QM	N/A	N/A	None
93	7	Lobby	A	1	Door	---	Metal	0.2	QM	N/A	N/A	None
94	7	Lobby	A	1	Door	Buck	Metal	0.0	QM	N/A	N/A	None
95	7	Lobby	A	1	Wall	N/A	Concrete	0.0	QM	N/A	N/A	None
96	7	Lobby	A	1	Floor	N/A	Concrete	0.1	QM	N/A	N/A	None
97	7	Lobby	A	2	Door	---	Metal	1.5	QM	N/A	N/A	None
98	7	Lobby	A	2	Door	Frame	Metal	3.6	QM	N/A	N/A	None
99	7	Lobby	B	1	Door	---	Metal	-0.1	QM	N/A	N/A	None
100	7	Lobby	B	1	Wall	N/A	Concrete	-0.1	QM	N/A	N/A	None
101	7	Lobby	C	1	Wall	N/A	Concrete	0.0	QM	N/A	N/A	None
102	7	Lobby	D	1	Wall	N/A	Concrete	0.0	QM	N/A	N/A	None
103	8	Break Room	C	1	Door	---	Metal	-0.1	QM	N/A	N/A	None
104	8	Break Room	C	1	Door	Buck	Metal	0.0	QM	N/A	N/A	None

SEQUENTIAL REPORT OF LEAD PAINT INSPECTION

Inspection Date: 2/23/2015 Area Inspected: 700 South Wood Ave Linden NJ
 Action Level: 1.0 mg/cm2
 Report Number: S#1169 - 2/23/2015 08:56
 Total Readings: 126
 Unit Started: 2/23/2015 - 08:56
 Unit Finished: 2/23/2015 - 12:01

Read No.	Rm	Room Name	Wall	Loc.	Structure	Member	Substrate	Lead (mg/cm2)	Mode	Paint Condition	Cause of Deterioration	Paint Color
105	8	Break Room	C	1	Wall	N/A	Concrete	0.2	QM	N/A	N/A	None
106	8	Break Room	C	1	Floor	N/A	Concrete	0.2	QM	N/A	N/A	None
107	8	Break Room	C	1	Cabinets	Frame	Wood	0.1	QM	N/A	N/A	None
108	8	Break Room	C	1	Wall	N/A	Drywall	0.1	QM	N/A	N/A	None
109	8	Break Room	D	1	Wall	N/A	Drywall	-0.2	QM	N/A	N/A	None
110	8	Break Room	A	1	Wall	N/A	Concrete	0.1	QM	N/A	N/A	None
111	8	Break Room	B	1	Wall	N/A	Drywall	0.2	QM	N/A	N/A	None
112	8	Break Room	C	1	Ceiling	N/A	Metal	0.0	QM	N/A	N/A	None
113	9	Men's Bath	C	1	Stall	Door	Metal	0.1	QM	N/A	N/A	None
114	9	Men's Bath	C	1	Wall	N/A	Concrete	-0.2	QM	N/A	N/A	None
115	9	Men's Bath	D	1	Wall	N/A	Concrete	-0.1	QM	N/A	N/A	None
116	9	Men's Bath	A	1	Window	Frame	Wood	-0.1	QM	N/A	N/A	None
117	9	Men's Bath	D	1	Wall	N/A	Concrete	0.0	QM	N/A	N/A	None
118	9	Men's Bath	B	1	Wall	N/A	Concrete	0.0	QM	N/A	N/A	None
119	9	Men's Bath	A	1	Wall	N/A	Concrete	0.4	QM	N/A	N/A	None
120	9	Men's Bath	A	1	Floor	N/A	Concrete	-0.3	QM	N/A	N/A	None
121	9	Men's Bath	A	1	Cabinets	Frame	Metal	-0.1	QM	N/A	N/A	None
122	9	Men's Bath	A	1	Bench	N/A	Wood	-0.1	QM	N/A	N/A	None
123	10	Storage 2	C	1	Door	---	Metal	0.2	QM	N/A	N/A	None
124	10	Storage 2	C	1	Door	Buck	Metal	0.1	QM	N/A	N/A	None
125	10	Storage 2	C	1	Wall	N/A	Concrete	-0.2	QM	N/A	N/A	None
126	10	Storage 2	D	1	Wall	N/A	Concrete	0.0	QM	N/A	N/A	None
127	10	Storage 2	D	1	Wall	N/A	Drywall	0.0	QM	N/A	N/A	None
128	10	Storage 2	A	1	Wall	N/A	Concrete	0.0	QM	N/A	N/A	None
129	10	Storage 2	B	1	Wall	N/A	Concrete	0.2	QM	N/A	N/A	None
130					Calibration			0.7	TC			

SEQUENTIAL REPORT OF LEAD PAINT INSPECTION

Inspection Date: 2/23/2015 Area Inspected: 700 South Wood Ave Linden NJ
 Action Level: 1.0 mg/cm2
 Report Number: S#1169 - 2/23/2015 08:56
 Total Readings: 126
 Unit Started: 2/23/2015 - 08:56
 Unit Finished: 2/23/2015 - 12:01

Read No.	Rm	Room Name	Wall	Loc.	Structure	Member	Substrate	Lead (mg/cm2)	Mode	Paint Condition	Cause of Deterioration	Paint Color
131					Calibration			0.7	TC			
132					Calibration			0.8	TC			

--- END OF READINGS ---

SUMMARY REPORT OF LEAD PAINT INSPECTION

Inspection Date: 2/23/2015 Area Inspected: 700 South Wood Ave Linden NJ
 Action Level: 1.0 mg/cm2
 Report Number: S#1169 - 2/23/2015 08:56
 Total Readings: 126
 Total Positives: 10
 Unit Started: 2/23/2015 - 08:56
 Unit Finished: 2/23/2015 - 12:01

Read No.	Rm	Room Name	Wall	Loc.	Structure	Member	Substrate	Lead (mg/cm2)	Mode	Paint Condition	Cause of Deterioration	Paint Color
14	1	Building	D	2	Door	---	Metal	2.2	QM	N/A	N/A	None
15	1	Building	D	1	Door	Frame	Metal	1.4	QM	N/A	N/A	None
28	1	Building	C	2	Door	---	Metal	2.1	QM	N/A	N/A	None
29	1	Building	C	2	Door	Frame	Metal	2.3	QM	N/A	N/A	None
37	2	Pump Room	A	1	Door	Lintel	Metal	1.7	QM	N/A	N/A	None
47	2	Pump Room	D	1	Stair	Railing	Metal	4.4	QM	N/A	N/A	None
52	2	Pump Room	C	1	Column	N/A	Metal	3.1	QM	N/A	N/A	None
56	3	Office 1	C	1	Pass Through	N/A	Metal	1.5	QM	N/A	N/A	None
97	7	Lobby	A	2	Door	---	Metal	1.5	QM	N/A	N/A	None
98	7	Lobby	A	2	Door	Frame	Metal	3.6	QM	N/A	N/A	None

--- END OF READINGS ---

COMMENTS REPORT OF LEAD PAINT INSPECTION

Inspection Date: 2/23/2015
Report Number: S#1169 - 2/23/2015 08:56
Area Inspected: 700 South Wood Ave Linden NJ

Unit Comments:
No Unit Comments

Room Comments:
No Room Comments

Reading Comments:
No Reading Comments

Appendix C Photographs (if applicable)

LEW Corporation is not responsible for the quality of the pictures, nor the clarity, content or the detail.



For more information
contact the
County Board of Health
at 311-1234



JOHN RUSSELL WHEELER
PUBLIC SWIMMING POOL
WALK COUNTY
1979





Jean Russell Wheeler Memorial Pool

GUEST ADMISSION: Please be respectful and please swimming

	Adults	Children
Monday-Friday (10am to 2pm)	\$ 4.00	\$ 2.00
Saturday-Sunday	\$ 5.00	\$ 2.50

HOURS OF OPERATION: No further admission after 5:00pm

Monday & 4th of July	11:00am - 6:00pm
Tuesday & Thursday	1:00pm - 6:00pm
Monday, Wednesday & Friday	1:00pm - 6:00pm

SENIOR CITIZEN & PEOPLE WITH DISABILITIES SWIM HOURS:

Wednesday	12:00pm - 1:00pm
-----------	------------------

POOL SEASON: June 26 to August 23, 2016

Udine County - We're Connected to You!









Appendix D Lab Support Documents (if applicable)

SECTION 00 31 32 – GEOTECHNICAL ENGINEERING REPORT

PART 1 - GENERAL

- A. The subsoil data included herein on the following pages is for such use as the Bidder wishes to make of it. The Architect and Owner assume no responsibility for the conclusions drawn therefrom by the Bidder. The data was developed by Professional Engineers at the request of the Owner.
- B. Subsurface Investigation Report.
 - 1. Melick-Tully and Associates, P.C. Subsurface Investigation Report.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 00 31 32

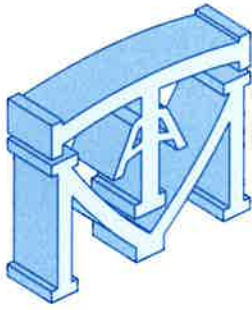
REPORT
SUBSURFACE INVESTIGATION

**PROPOSED WHEELER PARK RENOVATIONS
LINDEN, UNION COUNTY, NEW JERSEY
COUNTY OF UNION**

September 15, 2016

Prepared By:
Melick-Tully and Associates, P.C.
117 Canal Road
South Bound Brook, NJ 08880
Tel: 732-356-3400 Fax: 732-356-9054

MTA Project No.: 9402-001*1D



**MELICK-TULLY
AND ASSOCIATES, P.C.**
GEOTECHNICAL ENGINEERS AND
ENVIRONMENTAL CONSULTANTS

Principals:
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ROBERT E. SCHWANKERT, P.E.
TODD E. HOROWITZ, P.E.
MARK R. DENNO, P.E.
CHRISTOPHER P. TANSEY, P.E.

Senior Associates:
RICHARD D. LEV, CPG, LSRP
JAMES H. BEATTIE, P.E.

Consultant:
RAYMOND J. TULLY, P.E.

September 15, 2016

USA Architects Planners + Interior Designers
20 North Doughty Avenue
Somerville, New Jersey 08876

Attention: Mr. Andrew Adornato

**Report
Subsurface Investigation
Proposed Wheeler Park Renovations
Linden, Union County, New Jersey
County of Union**

Introduction

This report presents the results of a subsurface investigation completed by Melick-Tully and Associates, P.C. (MTA) for proposed renovations and alterations at the Wheeler Park pool house. The existing facilities are located in Wheeler Park, north and east of the intersection of West Stimpson Avenue and Kennedy Drive. The approximate location of the site is shown on the Site Location Map, Plate 1. This report was prepared in general accordance with our proposal dated August 5, 2016.

Proposed Construction

We were informed that the improvements would include a new bathroom structure which would be constructed in the area of the existing pool house building, and a spray park would be created in the area of the existing baby pool. We were provided with a copy of the existing conditions and demolition plan, which showed the footprint of the bathroom structure is

approximately 80 feet by 38 feet. We were not provided with grading information at the time of this report; however, we have assumed that minor cuts and fills would be required to achieve the proposed grades. In addition, we have not been provided with structural loading information; however, we have assumed that the bathroom structure would impose relatively light foundation and floor slab loads.

Purpose and Scope of Work

The purpose of our services was to:

- 1) explore the subsurface soil, and groundwater conditions within or as close as possible to the proposed building area depending on available access;
- 2) estimate the relevant geotechnical engineering properties of the encountered materials;
- 3) evaluate the site foundation requirements considering the anticipated structural loads and encountered subsurface conditions;
- 4) recommend an appropriate type of foundation for support of the proposed structure, and provide geotechnical-related foundation design and installation criteria, including an estimate of the Site Class as defined by the International Building Code 2015, New Jersey Edition, for seismic design purposes;
- 5) provide recommendations for the support and the need for subdrainage of the lowest level floor slab;
- 6) estimate the post-construction settlements of the recommended floor and foundation systems; and
- 7) discuss appropriate earthwork considerations consistent with the proposed construction and encountered subsurface conditions.

To accomplish these purposes, a subsurface exploration program consisting of two supervised test borings was performed. Prior to completing the test borings, USA Architects provided MTA with a plan showing two suggested boring locations. The borings were adjusted

slightly in the field due to existing surface conditions, but they were completed as close as possible to the suggested locations. The borings were drilled using truck-mounted, hollow-stem auger drilling equipment, and extended to depths of about 25 to 26.5 feet below grade.

The borings were advanced under the direct technical observation of a geologist from MTA. Our representative located the explorations in the field in conjunction with a representative from USA Architects, maintained continuous logs of the explorations as the work proceeded, and supervised the soil sampling operations to develop the required subsurface information.

The approximate location of the test borings are shown on the Plot Plan, Plate 2. Detailed descriptions of the subsurface conditions encountered in the explorations are described on the Logs of Borings, Plates 3A and 3B. The soils were visually classified in general accordance with the Unified Soil Classification System described on Plate 4.

All soil samples obtained from the borings were brought to our office where they were further examined in our soil mechanics laboratory. Selected samples were subjected to geotechnical laboratory testing including natural moisture content determinations and mechanical grain-size analyses to further aid in their identification and evaluation. The results of the grain-size analyses are shown on Plate 5, Gradation Curves, while the results of the moisture content tests are shown on the boring logs.

The results of our field exploration and laboratory testing programs have provided the basis for our findings and foundation design recommendations, and are subject to the limitations attached as an Appendix to this report.

Site Conditions

Surface Features: The proposed improvements are located within a portion of Wheeler Park that currently contains a pool, baby pool, pool house, a one-story masonry building, and a playground. There are existing concrete sidewalks surrounding the pool and pool house. We have been informed that the existing baby pool and concrete sidewalk will be demolished for installation of the new water park. In addition, the pool house will be demolished, and the new bathroom structure will be placed within the footprint of the existing building. The pool house is shown to consist of a one-story masonry block building, and the finished floor elevation is shown to vary from Elevation +21.56 feet to +22.62 feet.

The Existing Conditions and Demolition Plan provided to us indicates that the surface grades near the new bathroom structure range from about Elevation +18 feet to +22 feet. It appears that the building is established atop existing fill, as the grades slope up towards the building.

Subsurface Conditions: The borings encountered about five inches of topsoil at the ground surface. The topsoil was underlain by fill consisting of silty sands containing varying amounts of gravel. The sandy fill was estimated to be dense to very dense in relative density. A layer of possible fill was encountered in Boring 2, which also consisted of hard clayey silt. The fill/possible fill extended to depths of about two and one-half to four and one-half feet below grade. It should be noted that the existing building is established at a higher elevation than the surrounding grades, and was likely constructed atop fill. Therefore, it should be expected that additional fill could be encountered within the footprint of the proposed building.

The fill/possible fill were underlain by natural silty sands in Boring 2. The silty sands were estimated to be very dense in relative density, and extended to a depth of about eight and one-half feet below grade. The silty sands in Boring 2, and fill soils in Boring 1 were underlain by natural silty and clayey soils. The silt and clay were estimated to be medium to very stiff in consistency, and extended to depths of about 22.5 to 24.5 feet below grade. The silty and clayey soils were underlain by decomposed shale, which was composed of shale sized gravel fragments containing varying amounts of sand, clay and silt. The decomposed shale was estimated to be dense to very dense, and extended to the maximum depths explored, 24.5 to 26 feet below grade.

Groundwater was encountered, upon completion, in the borings at depths of about 9 to 13.5 feet below grade. In addition, soil mottling, which may be indicative of perched or trapped water, was encountered in Boring 1 at a depth of about five feet below grade.

Findings and Recommendations

Based on the results of our study, it is our opinion that:

- 1) The borings encountered silty and sandy fill, underlain by natural silty sands, silty clay, clayey silt, and decomposed shale. Due to the presence of the existing building, borings could not be completed within the footprint of the proposed building. Based on our visual observations, it appears that the building is established atop existing fill, and therefore, additional (deeper) fill could be encountered beneath the limits of the proposed footprint. We recommend that a series of test pits be completed following demolition of the existing building to confirm the nature and thickness of the fill beneath the proposed building footprint.
- 2) The existing building should be demolished and all structural elements and utilities removed for their full depth. The resulting excavations should be backfilled under the observation of the project geotechnical engineer to the planned subgrade levels with controlled compacted fill.
- 3) The proposed building can be supported by conventional shallow foundations that derive their support from the natural undisturbed soils. The floor slab of the building could be supported atop the recompacted fill

soils provided the test pits do not encounter any deleterious materials, the fill can be recompacted to a dense condition, and the owner is willing to accept a risk of slightly greater than normal settlements. Otherwise, all of the fill should be removed from within and five feet beyond the limits of the proposed building. Should the additional test pits determine that the fill within the proposed building footprint is much deeper than originally anticipated, the footings would either have to be lowered to extend through the fill to the surface of natural soils, and the resultant excavations backfilled with either clean stone aggregate, or lean concrete to the proposed subgrade levels, or the footings could potentially be supported atop the existing fill soils. However, MTA would have to be on-site to observe the excavation of the test pits, as well as the foundation subgrade soils to determine if the existing fill soils could support the proposed footing loads.

- 4) Shallow foundations established atop the natural soils, or controlled compacted fill installed atop the natural soils could be designed to impose a maximum allowable net bearing pressure of up to 4,000 pounds per square foot (psf). Assuming the foundations will be established atop the natural soils, the footings should extend through the existing fill soils to the underlying undisturbed, dense natural soils. If this requires overexcavation beneath the proposed footing bottoms to reach the surface of natural soils, the excavations should be widened one foot on each side of the excavation for every two feet of overexcavation, and the resultant excavation should be backfilled with clean stone aggregate. Otherwise, the footing excavation can be backfilled with lean concrete to the proposed subgrade elevation. A foundation overexcavation detail is attached as Plate 6 to this report to further explain the overexcavation procedure.

If the test pits indicate that additional fill is present beneath the footprint, and it is not desired to extend the footings to the surface of the natural soils, it may be possible for the footings to derive their support from the existing, recompacted fill soils. However, as previously indicated, MTA would have to be on-site during the excavation of the test pits, as well as the footing excavations to observe the footing subgrade soils. Footings supported atop the existing fill soils could be designed to impose a maximum allowable net bearing pressure of up to 2,500 psf.

All footing subgrades should be observed by a geotechnical engineer from MTA prior to the installation of foundation concrete to confirm that adequate bearing materials are present.

All exterior foundations should be established at least three feet below the exterior grades to protect against frost penetration, or deeper if required by

local ordinance or to reach the intended bearing stratum. Any interior foundations in permanently heated areas could be supported at higher elevations, provided they reach the intended bearing stratum.

We estimate that footings designed and constructed in accordance with our recommendations would experience post-construction settlements of about one-half of one inch, or less.

- 5) The floor slab of the proposed building can be supported by the existing recompacted fill soils provided the fill does not contain any deleterious materials, can be recompacted to a dense condition, and the owner is willing to accept a risk of greater than normal post-construction settlements. Otherwise, the existing fill should be completely removed to the surface of the natural soils from within and five feet beyond the limits of the proposed building. Any areas that are detected to be soft or unstable during the proofrolling activities should be removed to the surface of dense and stable soils, and the resultant excavations backfilled with controlled compacted fill. We recommend that a four inch thick layer of clean crushed stone be installed atop the subgrade soils to provide a capillary break between the bottom of the floor slab, and the top of the subgrade soils.

We estimate that post-construction settlements of the floor slab will be on the order of one-quarter of one inch, or less.

- 6) Based on the results of our subsurface investigation and our knowledge of the regional geology, the materials beneath the site would generally be classified as a Site Class "D" as defined by the International Building Code 2015, New Jersey Edition.
- 7) We have not been provided with a copy of a grading plan at the time of this report. Should any fill be required to complete site grading, the fill should consist of either on-site or imported soils consisting of granular soils containing less than 15 percent fines, and a maximum particle size of four inches. All fill should be moisture conditioned as required to permit compaction to the required densities, placed in lifts on the order of eight to twelve inches in thickness, and be compacted to at least 95 percent of its maximum dry density as determined by the ASTM D-1557 test procedure.
- 8) Groundwater was encountered in the borings at depths of about 9 to 13 feet below grade. In addition, soil mottling, which may be indicative of perched or trapped water, was encountered in Boring 1 at a depth of about five feet below grade. Therefore, assuming there are no deep cuts required to install utilities, groundwater is not expected to be a major construction

concern assuming. Should any perched or trapped water be encountered during shallow excavations, dewatering should be provided by the contractor to maintain relatively dry excavations at all times. Surface runoff should be directed away from foundation excavations and dewatering should be provided, as necessary, to maintain excavations in a relatively dry condition at all times during construction.

The following Plates and Appendix are attached and complete this report:

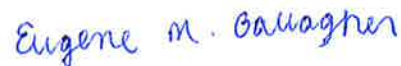
Plate 1 - Site Location Map
Plate 2 - Plot Plan
Plates 3A and 3B - Logs of Borings
Plate 4 - Unified Soil Classification System
Plate 5 - Gradation Curves
Plate 6 - Suggested Foundation Overexcavation Detail
Appendix - Limitations

Very truly yours,

MELICK-TULLY and ASSOCIATES, P.C.

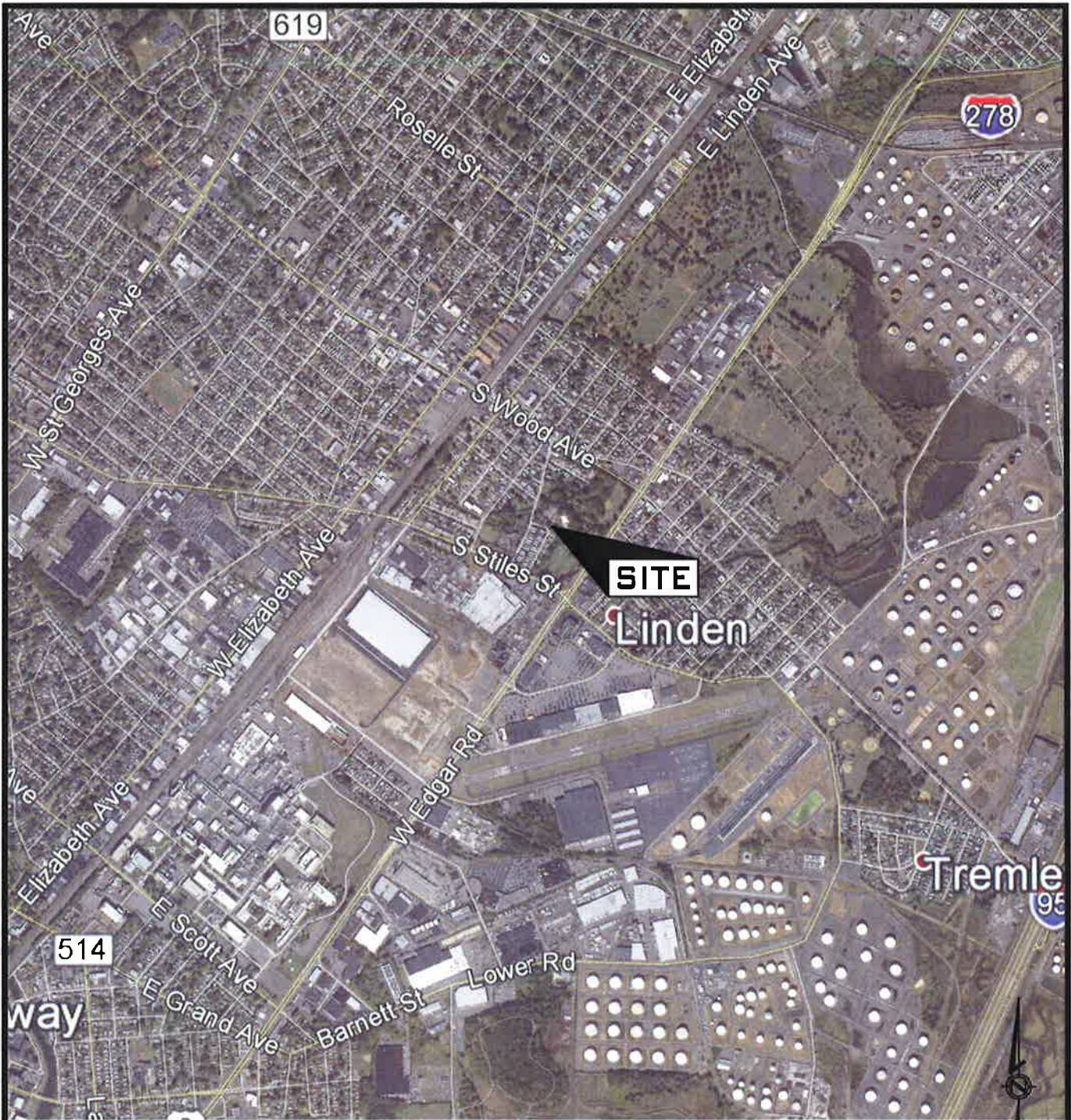


Kimberly A. Tully, P.E.



Eugene M. Gallagher, P.E.
President

KAT:EMG/kat
9402-001*1D
(3 copies submitted)



Aerial Photo courtesy of Google Earth Pro

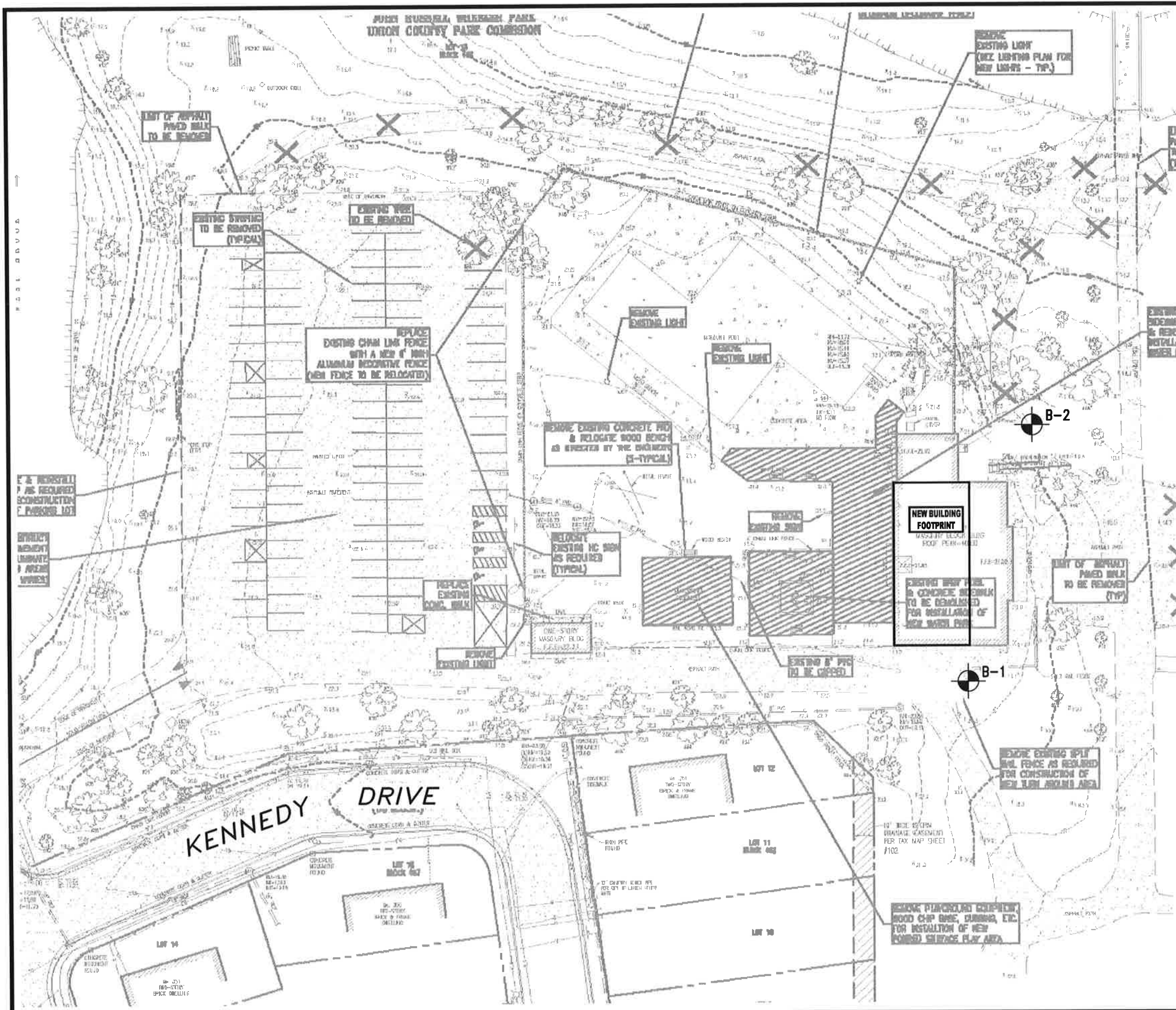


MELICK-TULLY AND ASSOCIATES, P.C.
 Geotechnical Engineers
 & Environmental Consultants
 117 Canal Road
 South Bound Brook, New Jersey 08880
 (732) 356-3400

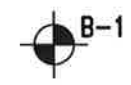
SITE LOCATION MAP

PROPOSED WHEELER PARK RENOVATIONS
 LINDEN, NEW JERSEY
 COUNTY OF UNION

JOB NO.	9402-001*1D	FILE NO.	27240	DR. BY	VJD	CHK. BY	KAT	DATE	9/9/16	SCALE	1"=2,000'	PLATE	1
---------	-------------	----------	-------	--------	-----	---------	-----	------	--------	-------	-----------	-------	---



KEY:



NUMBER AND APPROXIMATE LOCATION OF BORINGS COMPLETED FOR THIS STUDY

NOTES:

1. This drawing is part of Melick-Tully and Associates, P.C. Report No. 9402-001*1D and should be read together with the report for complete evaluation.
2. General layout was obtained from a drawing prepared by Harbor Consultants Inc., entitled "Existing Conditions and Demolition Plan" dated 2/8/15, scale 1"=30'.

PLOT PLAN				
PROPOSED WHEELER PARK RENOVATIONS LINDEN, NEW JERSEY COUNTY OF UNION				
MELICK-TULLY AND ASSOCIATES, P.C. Geotechnical Engineers & Environmental Consultants 117 Canal Road South Bound Brook, New Jersey 08880 (732) 356-3400				
JOB NO.		FILE NO.		
9402-001*1D		27240		
DR. BY	CHK. BY	DATE	SCALE	PLATE
VJD	KAT	9/9/16	1"=50'	2

LOG OF BORING

COMPLETION DATE: 9/2/16
JOB NUMBER: 9402-001*1D

BORING NO. 1
SURFACE ELEVATION: +21 ft. (±)

WATER LEVEL: 13'
READING DATE: 9/2/16

DEPTH	SAMPLES	N-VALUE	MOISTURE CONTENT (%)	SYMBOL	DESCRIPTION	DEPTH
	S1	43	12.5		5" Topsoil	
	S2	24	13.6		Fill: Yellow-brown fine to medium sand, and clayey silt, trace fine gravel (moist)(dense)	
5	S3	25		ML	Yellow-brown clayey silt, some fine to medium sand (moist)(very stiff)	5
				ML	Red-brown clayey silt, little fine to medium sand, trace fine gravel, with gray mottling (very moist)(very stiff)	
10	S4	14			Reddish brown silty clay, little fine to coarse sand, little fine to coarse gravel (very moist)(stiff)	10
15	S5	14		CL	- grading (wet)	15
20	S6	26			- grading to silty clay, some fine to coarse sand, some fine to coarse gravel (very stiff)	20
25	S7	61		GM	Red-brown fine to coarse gravel, and some fine to coarse sand, some clayey silt (decomposed shale)(wet)(very dense)	25
					- spoon refusal @ 26.5'	
					Boring completed @ 26.5' Groundwater encountered @ 13'	
30						30

NOTES FOR COLUMNS:

1. SAMPLE AT AVERAGE SAMPLING DEPTH
2. INDICATES THE NUMBER OF BLOWS TO ADVANCE A 2" OD SAMPLER A DISTANCE OF 12 INCHES USING A 140 POUND WEIGHT FALLING 30 INCHES

SOIL DESCRIPTION MODIFIERS:

- TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: KAT/pm 9/16

LOG OF BORING

COMPLETION DATE: 9/2/16
JOB NUMBER: 9402-001*1D

BORING NO. 2
SURFACE ELEVATION: +18 ft. (±)

WATER LEVEL: 9'
READING DATE: 9/2/16

DEPTH	SAMPLES	N-VALUE	MOISTURE CONTENT (%)	SYMBOL	DESCRIPTION	DEPTH
	S1	65	6.1		5" Topsoil	
	S2	41	9.8		Fill: Reddish brown fine to medium sand, and silt, trace fine gravel (moist)(very dense)	
5	S3	59		SM	Possible Fill: Reddish-brown clayey silt, little fine to coarse sand, little fine to coarse gravel (possible fill)(moist)(hard) Reddish brown fine to medium sand, and silt, little fine to coarse gravel (moist)(very dense)	5
10	S4	8		CL	Reddish brown silty clay, little fine to coarse sand, little fine to coarse gravel (wet)(medium to stiff)	10
15	S5	14				15
20	S6	18		SM	Reddish brown fine to medium sand, some clayey silt, some fine gravel (wet)(medium dense)	20
25	S7	41		GM	Red-brown fine to coarse gravel, little fine to coarse sand, little clayey silt (decomposed shale)(wet)(dense)	25
30					Boring completed @ 25' Groundwater encountered @ 9'	30

NOTES FOR COLUMNS:

1. SAMPLE AT AVERAGE SAMPLING DEPTH
2. INDICATES THE NUMBER OF BLOWS TO ADVANCE A 2" OD SAMPLER A DISTANCE OF 12 INCHES USING A 140 POUND WEIGHT FALLING 30 INCHES

SOIL DESCRIPTION MODIFIERS:

- TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: KAT/pm 9/16

MAJOR DIVISIONS			LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS More than 50% of material is LARGER than No. 200 Sieve	GRAVEL & GRAVELLY SOILS More than 50% of coarse fraction RETAINED on No. 4 Sieve	CLEAN GRAVELS (Little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines.
		GRAVELS WITH FINES (Appreciable amount of fines)	GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
			GM	Silty gravels, gravel-sand-silt mixtures.
		SAND AND SANDY SOILS More than 50% of coarse fraction PASSING a No. 4 Sieve	CLEAN SAND (Little or no fines)	GC
	SW			Well-graded sands, gravelly sands, little or no fines.
	SANDS WITH FINES (Appreciable amount of fines)		SP	Poorly-graded sands, gravelly sands, little or no fines.
			SM	Silty sands, sand-silt mixtures
	FINE GRAINED SOILS More than 50% of material is SMALLER than No. 200 Sieve.	SILTS AND CLAYS Liquid limit LESS than 50	SC	Clayey sands, sand-clay mixtures.
ML			Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.	
CL			Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.	
SILTS AND CLAYS Liquid limit GREATER than 50		OL	Organic silts and organic silty clays of low plasticity.	
		MH	Inorganic silts, micaceous or diatomaceous fine sand or silty soils.	
		CH	Inorganic clays of high plasticity, fat clays.	
HIGHLY ORGANIC SOILS			OH	Organic clays of medium to high plasticity, organic silts.
			PT	Peat, humus, swamp soils with high organic contents

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS.

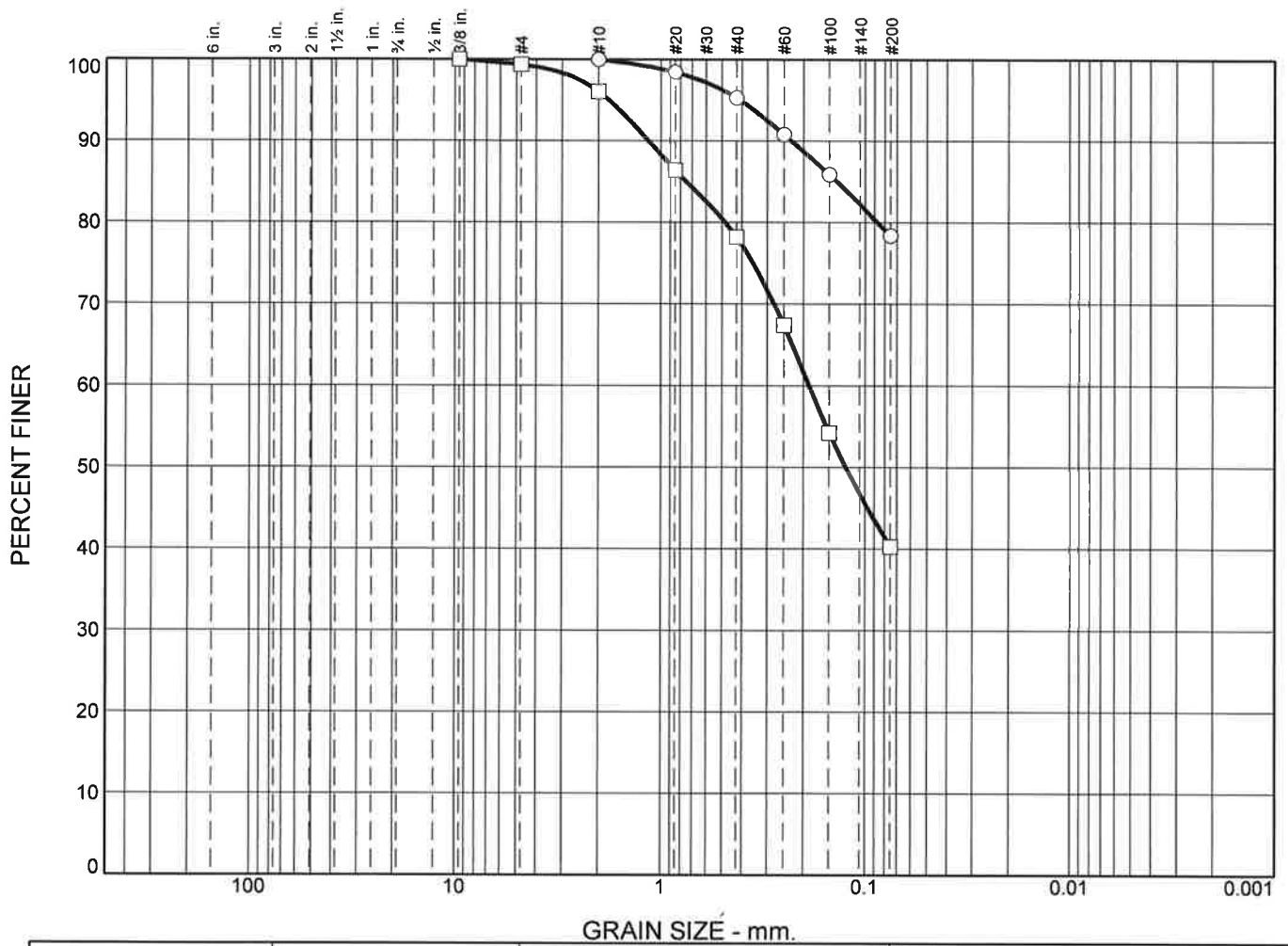
GRADATION*		COMPACTNESS*		CONSISTENCY*	
% Finer by Weight		sand and/or gravel		clay and/or silt	
		Relative Density		Range of Shearing Strength in Pounds per Square Foot	
Trace	0% to 10%	Loose	0% to 40%	Very Soft	less than 250
Little	10% to 20%	Medium Dense	40% to 70%	Soft	250 to 500
Some	20% to 35%	Dense	70% to 90%	Medium	500 to 1000
And	35% to 50%	Very Dense	90% to 100%	Stiff	1000 to 2000
				Very Stiff	2000 to 4000
				Hard	Greater than 4000

*Values are from laboratory or field test data, where applicable. When no testing was performed, values are estimated.

UNIFIED SOIL CLASSIFICATION SYSTEM

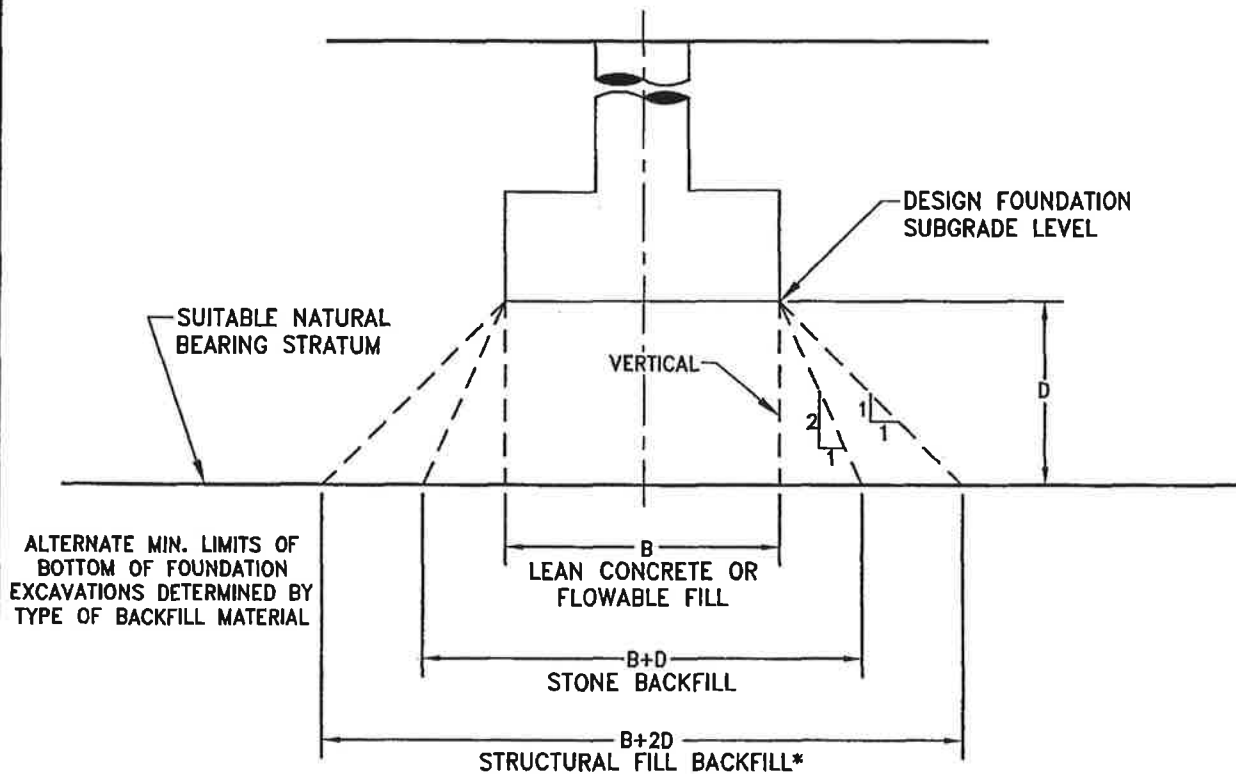
SOIL CLASSIFICATION CHART

Gradation Curve(s)



	% Cobbles	% Gravel		% Sand			% Fines
		Coarse	Fine	Coarse	Medium	Fine	
○	0.0	0.0	0.0	0.0	4.8	16.8	78.4
□	0.0	0.0	0.7	3.3	17.8	37.9	40.3

SOIL DATA					
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-1	S-2	2-4	Clayey Silt, some fine to medium Sand. (MC=13.6%)	ML
□	B-2	S-1	0-2	Fine to medium Sand, and Silt, trace fine Gravel. (MC=6.1%)	Fill



SUGGESTED FOUNDATION OVEREXCAVATION DETAIL

NOT TO SCALE

NOTES:

1. B = Width of foundation.
2. D = Depth of overexcavation of unsuitable materials below bottom of foundation subgrade to surface of suitable bearing stratum.
3. Lean Concrete or Flowable Fill: Minimum 500 psi.
4. Stone Backfill: Clean 3/4 inch crushed stone.
5. Structural Fill Backfill: Approved granular soils spread in lifts and compacted to at least 95 percent of maximum dry density as determined by the ASTM D1557 test procedure.
6. Stone and Structural Backfill alternates are not acceptable where excavations extend below adjacent foundations.



PLATE 6

APPENDIX

APPENDIX

Limitations

A. Subsurface Information

Locations: The locations of the explorations were approximately determined by tape measurement from existing surface features. Elevations of the explorations were approximately determined by interpolation between contours shown on topographic plans provided to us by the architect. The locations and elevations of the explorations should be considered accurate only to the degree implied by the method used.

Interface of Strata: The stratification lines shown on the individual logs of the subsurface explorations represent the approximate boundaries between soil types, and the transitions may be gradual.

Field Logs/Final Logs: A field log was prepared for each exploration by a member of our staff. The field log contains factual information and interpretation of the soil conditions between samples. Our recommendations are based on the final logs as shown in this report and the information contained therein, and not on the field logs. The final logs represent our interpretation of the contents of the field logs, and the results of the laboratory observations and/or tests of the field samples.

Water Levels: Water level readings have been made in the explorations at times and under conditions stated on the individual logs. These data have been reviewed and interpretations made in the text of this report. However, it must be noted that fluctuations in the level of the groundwater will occur due to variations in rainfall, temperature, and other factors.

Pollution/Contamination: Unless specifically indicated to the contrary in this report, the scope of our services was limited only to investigation and evaluation of the geotechnical engineering aspects of the site conditions, and did not include any consideration of potential site pollution or contamination resulting from the presence of chemicals, metals, radioactive elements, etc. This report offers no facts or opinions related to potential pollution/contamination of the site.

Environmental Considerations: Unless specifically indicated to the contrary in this report, this report does not address environmental considerations which may affect the site development, e.g., wetlands determinations, flora and fauna, wildlife, etc. The conclusions and recommendations of this report are not intended to supersede any environmental conditions which should be reflected in the site planning.

B. Applicability of Report

This report has been prepared in accordance with generally accepted soils and foundation engineering practices for the exclusive use of the County of Union for specific application to the design of the proposed Wheeler Park Renovations. No other warranty, expressed or implied, is made.

This report may be referred to in the project specifications for general information purposes only, but should not be used as the technical specifications for the work, as it was prepared for design purposes exclusively.

C. Reinterpretation of Recommendations

Change in Location or Nature of Facilities: In the event that any changes in the nature, design or location of the building are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing.

Changed Conditions During Construction: The analyses and recommendations submitted in this report are based in part upon the data obtained from two widely-spaced test borings performed for this study. The nature and extent of variations between the explorations may not become evident until construction. If variations then appear evident, it will be necessary to reevaluate the recommendations of this report.

Changes in State-of-the-Art: The conclusions and recommendations contained in this report are based upon the applicable standards of our profession at the time this report was prepared.

D. Use of Report by Prospective Bidders

This soil and foundation engineering report was prepared for the project by Melick-Tully and Associates, P.C. for design purposes and may not be sufficient to prepare an accurate bid. Contractors utilizing the information in the report should do so with the express understanding that its scope was developed to address design considerations. Prospective bidders should obtain the owner's permission to perform whatever additional explorations or data gathering they deem necessary to prepare their bid accurately.

E. Construction Observation

We recommend that Melick-Tully and Associates, P.C. be retained to provide on-site soils engineering services during the earthwork construction and foundation phases of the work. This is to observe compliance with the design concepts and to allow changes in the event that subsurface conditions differ from those anticipated prior to the start of construction.

SECTION 01 11 00 - SUMMARY OF WORK (SINGLE PRIME CONTRACT)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Sections, apply to work of this Section.

1.2 PROJECT DESCRIPTION

- A. The Project consists of the construction of a new Spray Park with Locker / Restroom Building, the alterations to the existing Food Services Building and the demolition of the Pool House and Pool Area, with all related site work, plumbing, mechanical, and electric work required by the Contract Documents for the County of Union. The site is located at Wheeler Park, 700 South Wood Avenue, Linden, NJ. The extent of the contract work is indicated in the Contract Documents.

- 1. Local custom and trade union jurisdictional settlement do not control the Scope of Work.

- B. The Contractor shall employ his workers for overtime work if required to meet the completion dates, at no additional cost to the Owner.
- C. The scope of the work shall not be limited to what is specifically called out on the drawings or specifications, but shall include any and all selective demolition as well as any cutting and patching as may be required to accomplish the intended construction.

1.3 USE OF PREMISES

- A. The Contractor shall limit his use of the premises to construction activities in areas indicated; allow for Owner occupancy and use by the public.
 - 1. Confine operations to areas within contract limits indicated. Portions of the site beyond areas in which construction operations are indicated are not to be disturbed.
 - 2. Keep driveways and entrances serving the premises clear and available to the Owner and the Owner's employees at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on site.
- B. Maintain the existing building in a weather tight condition throughout the construction period. Repair damage caused by constructions operations. Take all precautions necessary to protect the building and its occupants during the construction period.

1.4 OWNER OCCUPANCY

- A. The Owner will occupy the site during the entire construction period. Cooperate with the Owner during construction operations to minimize conflicts and to facilitate Owner usage. Perform the work so as not to interfere with the Owner's operations.

1.5 PROJECT REQUIREMENTS FOR MOISTURE CONTROL WITHIN THE BUILDING

- A. The Project consists of construction of a new facility and environmental systems. The Contractor is responsible for the start-up and functioning of the environmental systems within the building.
- B. Building Enclosure: The Contractor shall be responsible for a timely enclosure of the building envelope, whether temporary or permanent, to prevent weather infiltration into the building once substrates (which will receive finishes) begin to be installed.
- C. Concrete Slabs: The Contractor shall be responsible for proper curing of the concrete slabs, and for the proper moisture content as it relates to the applicable floor finishes. The Contractor shall provide Calcium Chloride (ASTM F 1869), Relative Humidity (ASTM F 2170), and PH (ASTM F-710) tests in order to assure compliance with the scheduled floor finishes.
- D. Where interior finishes require conditioning of the space and substrates for a period of time prior to the installation of the finishes, the Contractor shall be fully responsible for timely enclosure, environmental start up and conditioning of the spaces in order to bring the substrates into compliance with the finish requirements, as to not delay the Work in accordance with the project schedule.
 - 1. When environmental systems are not in operation in time to provide conditioning of the spaces as required for the finish installation, temporary environmental systems shall be utilized with no additional cost to the Owner.
- E. Protection: The Contractor shall be responsible for protection of all in-place work which shall include, but not be limited to, temporary coverings and enclosures to prevent deterioration or otherwise detrimental exposure of all products in place. Protection shall be in place at the end of each work day.

1.6 KNOWLEDGE OF CONTRACT REQUIREMENTS

- A. The Contractor and his Subcontractor's, Sub-Subcontractor's and material men shall consult in detail the General Conditions, Supplementary Conditions, all Divisions and Sections of the Specifications, all Drawings and all Addenda for instructions and requirements pertaining to the Work, and at his and their cost, shall provide all labor, materials, equipment and services necessary to furnish, install and complete the work in strict conformance with all provisions thereof.
- B. The Scope of Work for the Contract is not necessarily limited to the description of each Section of the Specifications and the illustrations shown on the Drawings. Include all minor items not expressly indicated in the Contract Documents, or as might be found necessary as a result of field conditions, in

order to complete the work as it is intended, without any gaps between the various subdivisions of work of the Contractor and his Subcontractors.

- C. The Contractor will be held to be thoroughly familiar with all conditions affecting labor in the neighborhood of the project including, but not limited to, Unions, incentive pay, procurement, living and commuting conditions and to have informed his Subcontractors and Sub-Subcontractors thereof.

1.7 CONTRACT DOCUMENTS INFORMATION

- A. The Contract Documents are prepared in accordance with available information as to existing conditions and locations. If, during construction, conditions are revealed at variance with the Contract Documents, notify the Architect promptly so that supplementary instructions may be issued.
- B. The Specifications determine the kinds and methods of installation of the various materials, the Drawings establish the quantities, dimensions and details of materials, the schedules on the Drawings give the location, type and extent of the materials.
- C. Should the Drawings, Specifications or schedules disagree in themselves or with either or both of the others, the better quality or greater quantity of work or materials shall be performed and provided, unless otherwise directed in writing by the Architect.
- D. Dimensions given on the Drawings govern scale measurements and large scale drawings govern small scale drawings, except as to anything omitted unless such omission is expressly noted on the larger scale drawings.
- E. The techniques or methods of specifying to record requirements varies throughout text, and may include "prescriptive", "open generic/descriptive", "compliance with standards", "performance", "proprietary", or a combination of these. The method used for specifying one unit of work has no bearing on requirements for another unit of work.
- F. Whenever a material, article or piece of equipment is referred to in the singular number in the Contract Documents, it shall be the same as referring to it in the plural. As many such materials, articles or pieces of equipment shall be provided as are required to complete the work.
- G. With the approval of the Architect and without additional cost to the Owner, the Contractor shall make all necessary changes or modifications to locations as may be necessary to suit requirements and conditions at the building and for the proper and conveniently accessible location of all parts of systems within the project.
- H. Small details not usually shown or specified, but necessary for the proper installation and operation of the work, shall be provided.
- I. Cap all incomplete lines, ducts, conduits, openings, etc., until ready for final connection, after which they shall be thoroughly cleaned and left unobstructed.

PART 2 - PRODUCTS (Not applicable).

Demolition & New Construction
at Wheeler Park
for the County of Union

USA # 2014-110

PART 3 - EXECUTION (Not applicable).

END OF SECTION 01 11 00

SECTION 01 11 05 - TIME OF COMPLETION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 PROJECT SCHEDULE

- A. Final Completion (issuance of Certificate of Occupancy/Certificate of Final Approval) shall be as specified in the Bid Document Submission, Time of Completion.
 - 1. Prepare and submit itemized Submittal Schedule no later than 15 Calendar days after Notice to Proceed.
 - 2. Prior to any onsite work commencing, submit Construction Schedule as defined in Specification Section 01 33 00 no later than 10 Calendar days after Notice to Proceed.
 - 3. Complete Submission to the Architect of all required submittals (shop drawings, samples, catalog cuts, etc.) no later than 30 Calendar days after Notice to Proceed.
 - 4. "On site," work shall be coordinated with the Owner's operations, see Division 01, "Summary of Work" for spaces occupied during construction.
 - 5. It is imperative that the contractor properly staff the project (including overtime and after hours work with no additional cost to the Owner) in order to meet Final Completion. The Owner and Owner's representative will be closely monitoring the progress of the work throughout the project to ensure that the manpower and progress of the work is sufficient to meet the contract schedule.
- B. Liquidated damages provisions as specified in the General Specifications, included hereto and as modified by this Contract shall apply to the substantial completion date for the entire project.

END OF SECTION 01 11 05

SECTION 01 21 00 - ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements governing allowances.
 - 1. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when direction will be provided to the Contractor. If necessary, additional requirements will be issued by Change Order.
- B. Types of allowances include the following:
 - 1. Contingency allowances.
- C. Related Sections:
 - 1. Division 01 Section "Unit Prices" for procedures for using unit prices.
 - 2. Division 01 Section "Quality Requirements" for procedures governing the use of allowances for testing and inspecting.
 - 3. Divisions 02 through 49 Sections for items of Work covered by allowances.

1.3 SELECTION AND PURCHASE

- A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.
- B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.
- C. Purchase products and systems selected by Architect from the designated supplier.

1.4 SUBMITTALS

- A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

- B. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.
- C. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.
- D. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.5 COORDINATION

- A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.6 CONTINGENCY ALLOWANCES

- A. Use the contingency allowance only as directed by Architect for Owner's purposes and only by Change Orders that indicate amounts to be charged to the allowance.
- B. Contractor's overhead, profit, and related costs for products and equipment ordered by Owner under the contingency allowance are included in the allowance and are not part of the Contract Sum. These costs include delivery, installation, insurance, equipment rental, and similar costs.
- C. At Project closeout, credit unused amounts remaining in the contingency allowance to Owner by Change Order.

1.7 ADJUSTMENT OF ALLOWANCES

- A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.
 - 1. Include installation costs in purchase amount only where indicated as part of the allowance.
 - 2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.
 - 3. Submit substantiation of a change in scope of work, if any, claimed in Change Orders related to unit-cost allowances.
 - 4. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.
- B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.

1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of work has changed from what could have been foreseen from information in the Contract Documents.
2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

- A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

- A. Allowance No. 1: Contingency Allowance: Include a contingency allowance of \$75,000.00 for use according to Owner's instructions.

END OF SECTION 01 21 00

SECTION 01 23 00 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General Specifications and other Division-01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for Alternates.
- B. Definition: An Alternate is an amount proposed by Bidders and stated on the Bid Form for certain construction activities defined in the Bidding Requirements that may be added to or deducted from Base Bid amount if the Owner decides to accept a corresponding change in either the amount of construction to be completed, or in the products, materials, equipment, systems or installation methods described in Contract Documents.
- C. Coordination: Coordinate related Work and modify or adjust adjacent Work as necessary to ensure that Work affected by each accepted Alternate is complete and fully integrated into the project. Costs for the coordination, modification, or adjustment necessary for each alternate are included in the costs for each Alternate.
- D. Notification: Immediately following the award of the Contract, prepare and distribute to each party involved, notification of the status of each Alternate. Indicate whether Alternates have been accepted, rejected or deferred for consideration at a later date. Include a complete description of negotiated modifications to Alternates.
- E. Schedule: A "Schedule of Alternates" is included at the end of this Section. Specification Sections referenced in the Schedule contain requirements for materials and methods necessary to achieve the Work described under each Alternate.
 - 1. Include as part of each Alternate, miscellaneous devices, accessory objects and similar items incidental to or required for a complete installation whether or not mentioned as part of the Alternate.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

- A. Alternate No. 1: Provide and Install
Items listed on drawings.

END OF SECTION 01 23 00

SECTION 01 25 00 - PRODUCT SUBSTITUTIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for handling requests for substitutions made after award of the Contract.
- B. Standards: Refer to Section "Reference Standards and Definitions" for applicability of industry standards to products specified.
- C. Procedural requirements governing the Contractor's selection of products and product options are included under Section "Materials and Equipment."

1.3 DEFINITIONS

- A. Definitions used in this Article are not intended to change or modify the meaning of other terms used in the Contract Documents.
- B. Substitutions: Requests for changes in products, materials, equipment, and methods of construction required by Contract Documents proposed by the Contractor after award of the Contract are considered requests for "substitutions." The following are not considered substitutions:
 - a. Substitutions requested by Bidders during the bidding period, and accepted prior to award of Contract, are considered as included in the Contract Documents and are not subject to requirements specified in this Section for substitutions.
 - b. Revisions to Contract Documents requested by the Owner or Architect.
 - c. Specified options of products and construction methods included in Contract Documents.
 - d. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

1.4 SUBMITTALS

- A. Substitution Request Submittal: Requests for substitution will be considered if received within 15 days after Notice to Proceed. Requests received more than 15 days after Notice to Proceed may be considered or rejected at the discretion of the Architect.

1. Submit 3 copies of each request for substitution for consideration. Submit requests in the form and in accordance with procedures required for Change Order proposals.
2. Identify the product, or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:
 - a. Product Data, including Drawings and descriptions of products, fabrication and installation procedures.
 - b. Samples, where applicable or requested.
 - c. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements such as size, weight, durability, performance and visual effect.
 - d. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate Contractors, that will become necessary to accommodate the proposed substitution.
 - e. A statement indicating the substitution's effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.
 - f. Cost information, including a proposal of the net change, if any in the Contract Sum.
 - g. Certification by the Contractor that the substitution proposed is equal-to or better in every significant respect to that required by the Contract Documents, and that it will perform adequately in the application indicated. Include the Contractor's waiver of rights to additional payment or time, that may subsequently become necessary because of the failure of the substitution to perform adequately.
3. Architect's Action: Within one week of receipt of the request for substitution, the Architect will request additional information or documentation necessary for evaluation of the request. Within 2 weeks of receipt of the request, or one week of receipt of the additional information or documentation, which ever is later, the Architect will notify the Contractor of acceptance or rejection of the proposed substitution. If a decision on use of a proposed substitute cannot be made or obtained within the time allocated, use the product specified by name. Acceptance will be in the form of a Change Order.
 - a. The Architect will review each request for substitution only once. The Contractor will be required to reimburse the Architect at his hourly rate, for any reviews which are required, or requested, beyond the initial review.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 SUBSTITUTIONS

- A. Substitutions may be permitted by the Architect, if, in his opinion, the requirements of the proposed substitution comply with the requirements specified for the material, article or piece of equipment; however, the Architect is not required to permit substitution pursuant to; "Whitten Corporation vs.

Paddock, Incorporated,” United States District Court, Massachusetts, April 12, 1974, affirmed by the Federal First Circuit Court, December 14, 1974, and the United States Supreme Court, 1988.

- B. The Architect has no obligation, after award of contract, to consider any brand other than those named in the Contract Documents. However, the Contractor may submit substitutes to the Architect for review, fully documented and certified, and accompanied by his proposal for a deduction in the Contract Sum.
- C. Conditions: The Contractor's substitution request will be received and considered by the Architect when one or more of the following conditions are satisfied, as determined by the Architect; otherwise requests will be returned without action except to record noncompliance with these requirements.
- a. Extensive revisions to Contract Documents are not required.
 - b. Proposed changes are in keeping with the general intent of Contract Documents.
 - c. The request is timely, fully documented and properly submitted.
 - d. The request is directly related to an "or equal" clause or similar language in the Contract Documents.
 - e. The specified product or method of construction cannot be provided within the Contract Time. The request will not be considered if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.
 - f. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
 - g. A substantial advantage is offered the Owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear. Additional responsibilities for the Owner may include additional compensation to the Architect for redesign and evaluation services, increased cost of other construction by the Owner or separate Contractors, and similar considerations.
 - h. The specified product or method of construction cannot be provided in a manner that is compatible with other materials, and where the Contractor certifies that the substitution will overcome the incompatibility.
 - i. The specified product or method of construction cannot be coordinated with other materials, and where the Contractor certifies that the proposed substitution can be coordinated.
 - j. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provide the required warranty.
 - k. Where a proposed substitution involves more than one prime Contractor, each Contractor shall cooperate with the other Contractors involved to coordinate the Work, provide uniformity and consistency, and to assure compatibility of products.
- D. The Contractor's submittal and Architect's acceptance of Shop Drawings, Product Data or Samples that relate to construction activities not complying with the Contract Documents does not constitute an acceptable or valid request for substitution, nor does it constitute approval.
- E. Refer to SUBSTITUTION REQUEST FORMS ON THE FOLLOWING PAGES.

END OF SECTION 01 25 00

REQUEST FOR SUBSTITUTION

Submit a copy of this form for each requested substitution. Fill in all blanks, check all boxes that apply and attach all necessary supporting data.

SUBSTITUTION NO.: _____

Specified Item: _____

Specification Section(s)/Paragraph(s): _____

Drawing Number(s): _____

Proposed Substitute: _____

(include, as applicable, manufacturer's name & address, trade name & model number of product and name of fabricator or supplier)

Reason for Proposed Substitution:

Net Change to Contract Sum: No Change Deduct \$ _____ Add \$ _____

Change to Contract Time: No Change _____ Days _____

The following required supporting documents are attached (Check all that apply):

Complete Product Data

Itemized comparison of properties of proposed product to specified product.

List of other projects on which proposed has been used, with project name, design professional's name and owner contact.

List of maintenance services and replacement materials available.

Statement of effect of substitution on construction schedule.

Description of change that will be required in other work or products if substitute product is approved.

Additional Information:

REQUEST FOR SUBSTITUTION

The undersigned testifies that he/she:

- Is submitting this substitution request within the limits set forth in the Contract Documents.
- Has investigated the proposed product and determined that it is equal or better than the specified product.
- Will provide the same warranty for the proposed product as for the specified product.
- Will coordinate installation and make other changes as required for the work to be complete in all respects, including: (a) redesign and (b) additional components and capacity required by other work affected by the change.
- Waives all claims for additional costs for evaluation of the substitution request, redesign if required, and reapproval by authorities having jurisdiction, if required.
- Waives reimburse the Owner for additional costs for evaluation of the substitution request, redesign if required, and reapproval by authorities having jurisdiction, if required.

Contractor's Signature: _____

Typed or Printed Name: _____

Title: _____

Company: _____

Address: _____

Phone Number: _____

Owner Approval: _____ Date: _____

Construction Manager Approval: _____ Date: _____
If Applicable

USA Architects, P.A. Approval: _____ Date: _____

Consulting Engineer Approval: _____ Date: _____

SECTION 01 26 00 - MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 01 Specification sections, apply to this section.

1.2 SUMMARY

- A. This section specifies administrative and procedural requirements for handling and processing Contract modifications.
- B. Related Sections: The following sections contain requirements that relate to this section:
 - 1. Division 01 Section "Submittals" for requirements for the Contractor's Construction Schedule.
 - 2. Division 01 Section "Application for Payment" for administrative procedures governing applications for payment.
 - 3. Division 01 Section "Product Substitutions" for administrative procedures for handling requests for substitutions made after award of the Contract.

1.3 CHANGE ORDER PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Proposed changes in the Work that will require adjustment to the Contract Sum or Contract Time will be issued by the Architect, with a detailed description of the proposed change and supplemental or revised Drawings and Specifications, if necessary.
 - 1. Proposal requests issued by the Architect are for information only. Do not consider them an instruction either to stop work in progress, or to execute the proposed change.
 - 2. Unless otherwise indicated in the proposal request, within 20 days of receipt of the proposal request, submit to the Architect for the Owner's review an estimate of cost necessary to execute the proposed change.
 - a. Include a list of quantities of products to be purchased and unit costs, along with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include a statement indicating the effect the proposed change in the Work will have on the Contract Time.

- B. Contractor-Initiated Change Order Proposal Requests: When latent or other unforeseen conditions require modifications to the Contract, the Contractor may propose changes by submitting a request for a change to the Architect.
 - 1. Include a statement outlining the reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and Contract Time.
 - 2. Include a list of quantities of products to be purchased and unit costs along with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
 - 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts, if allowed and or applicable.
 - 4. Comply with requirements in Section "Product Substitutions" if the proposed change in the Work requires the substitution of one product or system for a product or system specified.
- C. Proposal Request Form: Use AIA Document G 709 for Change Order Proposal Requests.

1.4 CHANGES IN THE WORK

- A. Tabulate cost breakdown into subcontracts and trades for each of which the quantity, labor, material, other cost and resulting final cost per unit shall be indicated. Quantity, labor, material, other cost and cost per unit generally include but are not necessarily limited to the following:
 - 1. Quantity; total number of items for each portion or unit of work as determined from the change.
 - 2. Labor; on site labor for the handling and installation of material from point of delivery at site.
 - 3. Material; cost of material as delivered to the site for installation and erection.
 - 4. Other cost; rental equipment, depreciation, site office, administration, overhead and profit, testing survey and layout, samples and all other costs not included in labor and material.
- B. When a change in the work includes a category or categories of work both added to and deducted from the Contract, the total quantities of added work and of deleted work shall be determined separately for each category and the appropriate unit price or net cost of the work shall be applied to the difference between the two total quantities.
- C. Unit prices shall be inclusive of all costs and shall be applied to units of measure as defined in the specifications for each category of work.
- D. For all extra work performed by the Contractor, the gross cost to the Owner shall include the net cost of the work to the Contractor plus an allowance for overhead and profit not to exceed, (See General Specifications), of the net cost.

- E. For all extra work performed by a Subcontractor, the gross cost to the Owner shall include the net cost of the work by the Subcontractor plus an allowance for overhead and profit not to exceed, (See General Specifications), of his net cost, plus the General Contractor's overhead and profit not to exceed, (See General Specifications), of the Subcontractor's net cost. In no case shall the total allowance for overhead and profit exceed, (See General Specifications), of the net cost of the work.
- F. Net cost of extra work shall be the actual or prorated cost of:
 - 1. In all cases to be in compliance with the General Specifications.
- G. After all the allowance contingency has been used, changes orders shall include gross costs. Gross cost shall be net costs plus items listed in the General Specifications. Overhead & Profit shall include; construction superintendent, supervision, engineering, insurance, taxes, administrative and site office expenses and all other general expenses.

1.5 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: When the Owner and Contractor are not in total agreement on the terms of a Change Order Proposal Request, the Architect may issue a Construction Change Directive on AIA Form G714, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 - 1. The Construction Change Directive will contain a complete description of the change in the Work and designate the method to be followed to determine change in the Contract Sum or Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
 - 1. After completion of the change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

1.6 CHANGE ORDER PROCEDURES

- A. Upon the Owner's approval of a Change Order Proposal Request, the Architect will issue a Change Order for signatures of the Owner and Contractor on AIA Form G701, as provided in the Conditions of the Contract.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01 26 00

SECTION 01 29 00 - APPLICATIONS FOR PAYMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements governing the Contractor's Applications for Payment.
 - 1. Coordinate the Schedule of Values and Applications for Payment with the Contractor's Construction Schedule, List of Subcontracts, and Submittal Schedule.

1.3 SCHEDULE OF VALUES

- A. The Contractor shall coordinate preparation of the Schedule of Values with preparation of the Contractor's Construction Schedule.
 - 1. Correlate line items in the Schedule of Values with other required administrative schedules and forms, including:
 - a. Contractor's construction schedule.
 - b. Application for Payment form.
 - c. List of subcontractors.
 - d. Schedule of alternates.
 - e. List of products.
 - f. List of principal suppliers and fabricators.
 - 2. Submit the Schedule of Values to the Engineer/Architect and Owner at the earliest feasible date, but in no case later than 14 days before the date scheduled for submittal of the initial Application for Payment.
 - a. Submit 3 copies of Schedule of Values to Engineer/Architect and Owner.
- B. Format and Content: Use the Project Manual Table of Contents as a guide to establish the format for the Schedule of Values.
 - 1. Identification: Include the following Project identification on the Schedule of Values:
 - a. Project name and location.
 - b. Name of the Architect.
 - c. Project number.
 - d. Contractor's name and address.

- e. Date of submittal.
2. Arrange the Schedule of Values in a tabular form with separate columns to indicate the following for each item listed:
 - a. Generic name.
 - b. Related Specification Section.
 - c. Name of subcontractor.
 - d. Name of manufacturer or fabricator.
 - e. Name of supplier.
 - f. Change Orders (numbers) that have affected value.
 - g. Dollar value.
 - h. Percentage of Contract Sum to the nearest one-hundredth percent, adjusted to total 100 percent.
3. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Break principal subcontract amounts down into several line items.
4. Round amounts off to the nearest whole dollar; the total shall equal the Contract Sum.
5. For each part of the Work where an Application for Payment may include materials or equipment, purchased or fabricated and stored, but not yet installed, provide separate line items on the Schedule of Values for initial cost of the materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
6. Tabulate schedule into subcontracts and trades for each of which the quantity, labor, materials, other cost and resulting final cost per unit shall be indicated. Quantity, labor, materials, other cost and cost per unit generally include but are not necessarily limited to the following:
 - a. Quantity; total number of times for each portion or unit of work as determined from the Contract Documents.
 - b. Labor; on site labor for the handling and installation of material from point of delivery at site.
 - c. Material; cost of materials as delivered to the site for installation and erection.
 - d. Other cost; rental equipment, depreciation, site office, administration, overhead and profit, testing, survey and layout, samples and all other costs not included in labor and material.
 - e. Cost per unit; total of labor, material and other Cost for each portion or unit of work derived from the total quantity of same.

1.4 PROGRESS PAYMENTS

- A. Based upon application for payments submitted to the Architect and Owner, by the Contractor, on the specified day of each month and Certificate of Payment certified by the Engineer/Architect, the Owner will make progress payments on account of the Contract Sum to the Contractor as follows:
 1. In making progress payments, there shall be retained two percent (2%) of the approved amount when the outstanding balance of the contract exceeds \$500,000, and 5% of the

amount due on each partial payment when the outstanding balance of the contract is \$500,000 or less, until final completion and acceptance of all work covered by the Contract, including the completion of all corrective or punch list items.

2. For each day delay in the Contractor's submission of an application for payment acceptable to the Engineer/Architect and Owner, the Owner may delay one day in making his progress payment.

1.5 APPLICATIONS FOR PAYMENT:

- A. The Contractor's monthly application for payment shall be in the same schedule form as the schedule of values, reflecting the same items. Unit costs shall be realistic for their part of the work.
- B. Each Application for Payment shall be consistent with previous applications and payments as approved by and paid for by the Owner.
 1. The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the final Application for Payment involve additional requirements.
- C. Payment Application Times: Each Payment Application shall be made at the end of each month and shall be based upon the entire month's completed work. A "pencil copy" shall be submitted on or about the 25th of each month showing the projected completion of work for the month, for review.
- D. In accordance with [N.J.S.A. 2A:30A-2a](#) the following payment procedure shall be in effect:
 1. The **alternate procedure** for local units applies when local policies **require governing body** approval authorizing the payment of bills. In addition to ensuring the contractor has performed in accordance with the contract and that the work has been approved and certified by the owner or the owner's "authorized approving agent," the following provisions apply:
 2. The 20th calendar day deadline of the default procedure to approve and certify, or decide to withhold full or partial payment **is deferred until the public meeting following 20 calendar days of the billing date**, at which time the bill must be approved for payment or notice provided as to why the bill or any portion of it will not be approved.
 3. If the billing is approved, the 30-day payment requirement of the default is replaced by the requirement that the bill be paid in the payment cycle following the meeting.
- E. Payment Application Forms: Use AIA Document G 702 and Continuation Sheets G 703 as the form for Application for Payment.
- F. Application Preparation: Complete every entry on the form, including notarization and execution by person authorized to sign legal documents on behalf of the Contractor. Incomplete applications will be returned without action.
 1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions have been made.

2. Include amounts of Change Orders and Construction Change Directives issued prior to the last day of the construction period covered by the application.
- G. Transmittal: Submit 3 executed copies of each Application for Payment to the Owner by means ensuring receipt within 24 hours; each copy shall be complete, including waivers of lien and similar attachments, when required.
1. Transmit each copy with a transmittal form listing attachments, and recording appropriate information related to the application in a manner acceptable to the Architect.
- H. Waivers of Mechanics Lien: Submit waivers of mechanics lien from every entity who may lawfully be entitled to file a mechanics lien arising out of the Contract, and related to the Work covered by the payment.
1. Submit final Application for Payment with final waivers from every entity involved with performance of Work covered by the application who could lawfully be entitled to a lien.
 2. Waiver Forms: Submit waivers of lien on forms, and executed in a manner, acceptable to Owner.
- I. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of the first Application for Payment include the following:
1. List of subcontractors.
 2. List of principal suppliers and fabricators.
 3. Schedule of Values.
 4. Contractor's Construction Schedule (preliminary if not final).
 5. Schedule of principal products.
 6. Schedule of unit prices.
 7. Submittal Schedule (preliminary if not final).
 8. List of Contractor's staff assignments.
 9. List of Contractor's principal consultants.
 10. Copies of building permits
 11. Copies of authorizations and licenses from governing authorities for performance of the Work.
 12. Initial progress report.
 13. Report of pre-construction meeting.

14. Certificates of insurance and insurance policies.
 15. Performance and payment bonds (if required).
 16. Data needed to acquire Owner's insurance.
- J. Final Payment Application: Administrative actions and submittals which must precede or coincide with submittal of the final payment Application for Payment include the following:
1. Completion of Project closeout requirements.
 2. Completion of punch list items.
 3. Transmittal of required Project construction records to Owner.
 4. Proof that taxes, fees and similar obligations have been paid.
 5. Removal of temporary facilities and services.
 6. Removal of surplus materials, rubbish and similar elements.
 7. Contractor's Affidavit of Payments of Debts & Claims - AIA Document G706.
 8. Contractor's Affidavit of Release of Liens - AIA Document G706A.
 9. Consent of Surety to Final Payment - AIA Document G707.

1.6 WAIVER OF LIENS

- A. The Contractor, for himself, and for all Subcontractors and material men, agrees that no mechanic's lien or other claim shall be filed or maintained by the Contractor or by any Subcontractor, material man, laborer or any other person whatsoever for, or on account of any work performed or materials furnished under this Contract. This agreement shall execute and deliver a separate waiver of Liens in form and substance satisfactory to the Owner contemporaneously with the execution of the Owner-Contractor Agreement and before any work is begun at the site.
- B. In every subcontract entered into by the Contractor after execution of this Contract or in connection herewith, the Contractor shall incorporate a provision, similar to the foregoing paragraph, to the effect that neither the Subcontractor nor any party acting through or under him shall file or maintain any mechanic's lien or other claim against the Owner in connection with the Work.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01 29 00

SECTION 01 31 13 - PROJECT COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and supervisory requirements necessary for Project coordination including, but not necessarily limited to:
 - 1. Coordination as a responsibility of each contractor.
 - 2. Special responsibility of the General Contractor for coordination.
 - 3. Administrative and supervisory personnel.
 - 4. General installation provisions.
 - 5. Cleaning and protection.
- B. Field engineering is included in Section "Field Engineering".
- C. Progress meetings, coordination meetings and pre-installation conferences are included in Section "Project Meetings".
- D. Requirements for the Contractor's Construction Schedule are included in Section "Submittals".

1.3 COORDINATION

- A. Coordination: Each Contractor shall coordinate construction activities included under various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections of the Specifications that are dependent upon each other for proper installation, connection, and operation.
 - 1. Where installation of one part of the Work is dependent on installation of other components, either before or after its own installation, schedule construction activities in the sequence required to obtain the best results.
 - 2. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service and repair.

3. Make adequate provisions to accommodate items scheduled for later installation.

1.4 SPECIAL RESPONSIBILITIES OF THE GENERAL CONTRACTOR AS PRINCIPAL PROJECT COORDINATOR

- A. Where necessary, prepare memoranda for distribution to each party involved outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.
 1. Prepare similar memoranda for the Owner and separate Contractors where coordination of their Work is required.
- B. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 1. Preparation of schedules.
 2. Installation and removal of temporary facilities.
 3. Delivery and processing of submittals.
 4. Progress meetings.
 5. Project Close-out activities.
- C. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.
 1. Salvage materials and equipment involved in performance of, but not actually incorporated in, the w Work. Refer to other sections for disposition of salvaged materials that are designated as Owner's property.

1.5 SUBMITTALS

- A. Coordination Drawings: The General Contractor shall prepare and submit coordination Drawings based on appropriate information from each prime, where close and careful coordination is required for installation of products and materials fabricated off-site by separate entities, and where limited space availability necessitates maximum utilization of space for efficient installation of different components.
 1. Show the interrelationship of components shown on separate Shop Drawings.
 2. Indicate required installation sequences.
 3. Comply with requirements contained in Section "Submittals."

4. Refer to Division 23 Section "Basic Mechanical Requirements," and Division 26 Section "Basic Electrical Requirements" for specific coordination Drawing requirements for mechanical and electrical installations, for each building.
- B. Staff Names: Within 10 days of Notice to Proceed, submit a list of the Contractor's principal staff assignments, including the Superintendent and other personnel in attendance at the site; identify individuals, their duties and responsibilities; list their addresses and telephone numbers.
 1. Post copies of the list in the Project meeting room, the temporary field office, and each temporary telephone.

PART 2 - PRODUCTS (Not Applicable).

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION PROVISIONS

- A. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.
- B. Manufacturer's Instructions: Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.
- C. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.
- D. Provide attachment and connection devices and methods necessary for securing Work. Secure Work true to line and level. Allow for expansion and building movement.
- E. Visual Effects: Provide uniform joint widths in exposed Work. Arrange joints in exposed Work to obtain the best visual effect. Refer questionable choices to the Architect for final decision.
- F. Recheck measurements and dimensions, before starting each installation.
- G. Install each component during weather conditions and Project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.
- H. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.
- I. Mounting Heights: Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decisions to the Architect for final decision.

3.2 CLEANING AND PROTECTION

- A. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- B. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- C. Limiting Exposures: Supervise construction activities to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period. Where applicable, such exposures include, but are not limited to, the following:
 - 1. Excessive static or dynamic loading.
 - 2. Excessive internal or external pressures.
 - 3. Excessively high or low temperatures.
 - 4. Thermal shock.
 - 5. Excessively high or low humidity.
 - 6. Air contamination or pollution.
 - 7. Water or ice.
 - 8. Solvents.
 - 9. Chemicals.
 - 10. Light.
 - 11. Radiation.
 - 12. Puncture.
 - 13. Abrasion.
 - 14. Heavy traffic.
 - 15. Soiling, staining and corrosion.
 - 16. Bacteria.
 - 17. Rodent and insect infestation.
 - 18. Combustion.

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19. Electrical current.
20. High speed operation,
21. Improper lubrication,
22. Unusual wear or other misuse.
23. Contact between incompatible materials.
24. Destructive testing.
25. Misalignment.
26. Excessive weathering.
27. Unprotected storage.
28. Improper shipping or handling.
29. Theft.
30. Vandalism.

END OF SECTION 01 31 13

SECTION 01 33 00 - SUBMITTALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for submittals required for performance of the Work, including;
 - a. Each Prime Contractor's construction schedule.
 - b. The Overall Project Schedule.
 - c. Submittal schedule.
 - d. Daily construction reports.
 - e. Shop Drawings.
 - f. Product Data and Samples.
- B. Administrative Submittals: Refer to other Division-1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to:
 - a. Permits.
 - b. Applications for payment.
 - c. Performance and payment bonds.
 - d. Insurance certificates.
 - e. List of Subcontractors.
- C. The Schedule of Values submittal is included in Section "Applications for Payment."
- D. Inspection and test reports are included in Section "Quality Control Services."

1.3 SUBMITTAL PROCEDURES

- A. Shop drawings, product data and samples will not be processed by Architect until list of subcontractors, material suppliers and fabricators is submitted as required by General and Supplementary Conditions.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.

2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
 - a. The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
 3. Processing: Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for re-submittals.
 - a. Allow two weeks for initial review. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. The Architect will promptly advise the Contractor when a submittal being processed must be delayed for coordination.
 - b. If an intermediate submittal is necessary, process the same as the initial submittal.
 - c. Allow two weeks for reprocessing each submittal.
 - d. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing.
- C. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
1. Provide a space approximately 4" x 5" on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.
 2. Include the following information on the label for processing and recording action taken.
 - a. Project name.
 - b. Date.
 - c. Name and address of Architect.
 - d. Name and address of Contractor.
 - e. Name and address of subcontractor.
 - f. Name and address of supplier.
 - g. Name of manufacturer.
 - h. Number and title of appropriate Specification Section.
 - i. Drawing number and detail references, as appropriate.
- D. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Architect using a transmittal form. Submittals received from sources other than the Contractor will be returned without action.
1. On the transmittal Record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations. Include Contractor's certification that information complies with Contract Document requirements.
- E. Contractor is responsible for all printing and distribution to all interested Contractors, subcontractors and suppliers. After Architect's review, prints bearing Architect's review stamp shall be forwarded by Contractor directly to Owner, Owner's Representative and Contractor's Superintendent at site. Contractor shall forward additional approved copies to all interested Contractors, subcontractors and suppliers on project.

- F. All shop drawings, samples and/or material or equipment submittals shall bear the Contractor's stamp or seal stating that the Contractor has reviewed the submittals and they conform to the requirements of the Contract Documents.
1. By submitting shop drawings, product data, samples, and similar submittals, the Contractor represents that he has determined and verified:
 - a. Dimensions, quantities, field dimensions, and relationship to existing Work.
 - b. Coordination with Work to be installed later.
 - c. Work on shop drawings is accurate and clearly shown.
 - d. Work equipment will fit into assigned spaces with sufficient access for servicing and maintenance.
 - e. Coordination with information on previously accepted shop drawings, product data, samples, or similar submittals.
 - f. Full compliance with requirements of Contract Documents.
 2. In reviewing shop drawings, product data, samples and similar submittals, the Architect/Engineer shall be entitled to rely upon the Contractor's representation that information in submittals is correct and accurate.
 3. Submittals that are returned or rejected because of insufficient Contractor review or coordination shall not be justification for a claim for an extension of time.

1.4 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Bar-Chart Schedule: Each prime contractor shall prepare a fully developed, horizontal bar-chart type Contractor's construction schedule, and submit same to the General Contractor within 10 days of the date established for "Commencement of the Work". The General Contractor/Project Coordinator will appropriately adjust each primes schedule to incorporate it into the Overall Project Construction Schedule as indicated below:
- a. Provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the Work as indicated in the "Schedule of Values".
 - b. Within each time bar indicate estimated completion percentage in 10 percent increments. As Work progresses, place a contrasting mark in each bar to indicate Actual Completion.
 - c. Prepare the schedule on a sheet, or series of sheets, of stable transparency, or other reproducible media, of sufficient width to show data for the entire construction period.
 - d. Secure time commitments for performing critical elements of the Work from parties involved. Coordinate each element on the schedule with other construction activities; include minor elements involved in the sequence of the Work. Show each activity in proper sequence. Indicate graphically sequences necessary for completion of related portions of the Work.
 - e. Coordinate the Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests and other schedules.
 - f. Indicate completion in advance of the date established for Substantial Completion. Indicate Substantial Completion on the schedule to allow time for the Architect's procedures necessary for certification of Substantial Completion.

- B. Phasing: Provide notations on the schedule to show how the sequence of the Work is affected by requirements for phased completion to permit Work by separate Contractors and partial occupancy by the Owner prior to Substantial Completion.
- C. Work Stages: Indicate important stages of construction for each major portion of the Work, including testing and installation.
- D. Area Separations: Provide a separate time bar to identify each major construction area for each major portion of the Work. Indicate where each element in an area must be sequenced or integrated with other activities.
- E. Distribution: Following response to the initial submittal, print and distribute copies to the Architect, Owner, subcontractors, and other parties required to comply with scheduled dates. Post copies in the Project meeting room and temporary field office.
- F. Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

1.5 SUBMITTAL SCHEDULE

- A. After development and acceptance of the Contractor's construction schedule and the Overall Project Schedule, prepare a complete schedule of submittals. Submit the schedule within 10 days of the date required for establishment of the Contractor's construction schedule. All submittals shall be made within 30 days of the date of Notice to Proceed.
 - 1. Coordinate submittal schedule with the list of subcontracts, schedule of values and the list of products as well as the Contractor's construction schedule.
 - 2. Prepare the schedule in chronological order; include submittals required during the first 90 days of construction. Provide the following information:
 - a. Scheduled date for the first submittal.
 - b. Related Section number.
 - c. Submittal category.
 - d. Name of subcontractor.
 - e. Description of the part of the Work covered.
- B. Distribution: Following response to initial submittal, print and distribute copies to the Architect, Owner, subcontractors, and other parties required to comply with submittal dates indicated. Post copies in the Project meeting room and field office.
- C. Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

1.6 DAILY CONSTRUCTION REPORTS

- A. Prepare a daily construction report, recording the following information concerning events at the site; and submit duplicate copies to the Architect at weekly intervals:

- a. List of subcontractors at the site.
- b. Approximate count of personnel at the site.
- c. High and low temperatures, general weather conditions.
- d. Accidents and unusual events.
- e. Meetings and significant decisions.
- f. Stoppages, delays, shortages, losses.
- g. Meter readings and similar recordings.
- h. Emergency procedures.
- i. Orders and requests of governing authorities.
- j. Change Orders received, implemented.
- k. Services connected, disconnected.
- l. Equipment or system tests and start-ups.
- m. Partial Completions, occupancies.
- n. Substantial Completions authorized.

1.7 SHOP DRAWINGS

- A. Submit newly prepared information, drawn to accurate scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not considered Shop Drawings.
- B. Shop Drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings. Include the following information:
 - a. Dimensions.
 - b. Identification of products and materials included.
 - c. Compliance with specified standards.
 - d. Notation of coordination requirements.
 - e. Notation of dimensions established by field measurement.
 - f. Sheet Size: Except for templates, patterns and similar full- size Drawings, submit Shop Drawings on sheets at least 8-1/2" x 11" but no larger than 36" x 48".
 - g. Initial Submittal: Submit six (6) blue- or black-line prints for the Architect's review; all but one print will be returned.
 - 1) One of the prints returned shall be marked-up and maintained as a "Record Document".
 - h. Do not use Shop Drawings without an appropriate final stamp indicating action taken in connection with construction.
- C. Coordination drawings are a special type of Shop Drawing that show the relationship and integration of different construction elements that require careful coordination during fabrication or installation to fit in the space provided or function as intended.
 1. Preparation of coordination Drawings is specified in section "Project Coordination" and may include components previously shown in detail on Shop Drawings or Product Data.
 2. Submit coordination Drawings for integration of different construction elements. Show sequences and relationships of separate components to avoid conflicts in use of space.

1.8 PRODUCT DATA

- A. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams and performance curves. Where Product Data must be specially prepared because standard printed data is not suitable for use, submit as "Shop Drawings."
1. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Include the following information:
 - a. Manufacturer's printed recommendations.
 - b. Compliance with recognized trade association standards.
 - c. Compliance with recognized testing agency standards.
 - d. Application of testing agency labels and seals.
 - e. Notation of dimensions verified by field measurement.
 - f. Notation of coordination requirements.
 2. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.
 3. Submittals: Submit six (6) copies of each required submittal; The Architect or Engineer will retain one, and will return the others marked with action taken and corrections or modifications required.
 - a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
 4. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.
 - a. Do not proceed with installation until an applicable copy of Product Data applicable is in the installer's possession.
 - b. Do not permit use of unmarked copies of Product Data in connection with construction.

1.9 SAMPLES

- A. Submit full-size, fully fabricated Samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture and pattern.
1. Mount, display, or package Samples in the manner specified to facilitate review of qualities indicated. Include the following:
 - a. Generic description of the Sample.

- b. Sample source.
 - c. Product name or name of manufacturer.
 - d. Compliance with recognized standards.
 - e. Availability and delivery time.
 2. Submit Samples for review of kind, color, pattern, and texture, for a final check of these characteristics with other elements, and for a comparison of these characteristics between the final submittal and the actual component as delivered and installed.
 - a. Where variation in color, pattern, texture or other characteristics are inherent in the material or product represented, submit multiple units (not less than 3), that show approximate limits of the variations.
 - b. Refer to other Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation and similar construction characteristics.
 3. Preliminary submittals: Where Samples are for selection of color, pattern, texture or similar characteristics from a range of standard choices, submit a full set of choices for the material or product.
 - a. Preliminary submittals will be reviewed and returned with the Architect's mark indicating selection and other action.
 4. Submittals: Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation and similar characteristics, submit 3 sets; one will be returned marked with the action taken.
 5. Maintain sets of Samples, as returned, at the Project site, for quality comparisons throughout the course of construction.
 - a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
 - b. Sample sets may be used to obtain final acceptance of the construction associated with each set.
- B. Distribution of Samples: Prepare and distribute additional sets to subcontractors, manufacturers, fabricators, suppliers, installers, and others as required for performance of the Work. Show distribution on transmittal forms.
 1. Field Samples specified in individual Sections are special types of Samples. Field Samples are full-size examples erected on site to illustrate finishes, coatings, or finish materials and to establish the standard by which the Work will be judged.
 - a. Comply with submittal requirements to the fullest extent possible. Process transmittal forms to provide a record of activity.

1.10 ARCHITECT'S ACTION

- A. Except for submittals for record, information or similar purposes, where action and return is required or requested, the Architect will review each submittal, mark to indicate action taken, and return promptly.

1. Compliance with specified characteristics is the Contractor's responsibility.
- B. Action Stamp: The Architect will stamp each submittal with a uniform, self-explanatory action stamp.
- C. Unsolicited Submittals: Unsolicited Submittals and Submittals not required by the Contract Documents may not be reviewed, may be discarded or returned to the sender without action.
- D. Repetitive Submittals: The Architect will take appropriate action TWICE (2) times, for each item submitted. Submittals requiring more than two (2) reviews due to inadequate or incomplete information, shall be subject to a review fee for each subsequent submittal. This fee shall be based upon the hourly rate of the Architect, charged to the Owner, and deducted from the Contract amount.

PART 2 - PRODUCTS (Not Applicable).

PART 3 - EXECUTION (Not Applicable).

END OF SECTION 01 33 00

SECTION 01 40 00- QUALITY CONTROL SERVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for quality control services.
- B. Quality control services include inspections and tests and related actions including reports, performed by independent agencies, governing authorities, and the Contractor. They do not include Contract enforcement activities performed by the Architect.
- C. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve the Contractor of responsibility for compliance with Contract Document requirements.
- D. Requirements of this Section relate to customized fabrication and installation procedures, not production of standard products.
 - 1. Specific quality control requirements for individual construction activities are specified in the Sections that specify those activities. Those requirements, including inspections and tests, cover production of standard products as well as customized fabrication and installation procedures.
 - 2. Inspections, test and related actions specified are not intended to limit the Contractor's quality control procedures that facilitate compliance with Contract Document requirements.
 - 3. Requirements for the Contractor to provide quality control services required by the Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.3 RESPONSIBILITIES

- A. Contractor Responsibilities: The Contractor shall provide inspections, tests and similar quality control services, specified in individual Specification Sections and required by governing authorities, except where they are specifically indicated to be the Owner's responsibility, or are provided by another identified entity; these services include those specified to be performed by an independent agency and not by the Contractor. Costs for these services shall be included in the Contract Sum.
 - 1. The Contractor shall employ and pay an independent agency, to perform specified quality control services.

- a. Where the Owner has engaged a testing agency or other entity for testing and inspection of a part of the Work, and the Contractor is also required to engage an entity for the same or related element, the Contractor shall not employ the entity engaged by the Owner, unless otherwise agreed in writing with the Owner.
2. Retesting: The Contractor is responsible for retesting where results of required inspections, tests or similar services prove unsatisfactory and do not indicate compliance with Contract Document requirements, regardless of whether the original test was the Contractor's responsibility.
 - a. Cost of retesting construction revised or replaced by the Contractor is the Contractor's responsibility.
3. Associated Services: The Contractor shall cooperate with agencies performing required inspections, tests and similar services and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include but are not limited to:
 - a. Providing access to the Work and furnishing incidental labor and facilities necessary to facilitate inspections and tests.
 - b. Taking adequate quantities of representative samples of materials that require testing or assisting the agency in taking samples.
 - c. Providing facilities for storage and curing of test samples, and delivery of samples to testing laboratories.
 - d. Security and protection of samples and test equipment at the Project site.
- B. Duties of the Testing Agency: The independent testing agency engaged to perform inspections, sampling and testing of materials and construction specified in individual Specification Sections shall cooperate with the Architect and Contractor in performance of its duties, and shall provide qualified personnel to perform required inspections and tests.
 - a. The agency shall notify the Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 - b. The agency is not authorized to release, revoke, alter or enlarge requirements of the Contract Documents, or approve or accept any portion of the Work.
 - c. The agency shall not perform any duties of the Contractor.
- C. Coordination: The Contractor and each agency engaged to perform inspections, tests and similar services shall coordinate the sequence of activities to accommodate required services with a minimum of delay. In addition the Contractor and each agency shall coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.
 1. The Contractor is responsible for scheduling times for inspections, tests, taking samples and similar activities.

1.4 SUBMITTALS

- A. The independent testing agency shall submit a certified written report of each inspection, test or similar service, to the Architect, in duplicate, unless the Contractor is responsible for the service. If the Contractor is responsible for the service, submit a certified written report of each inspection, test or similar service through the Contractor, in duplicate.

1. Submit additional copies of each written report directly to the governing authority, when the authority so directs.
2. Report Data: Written reports of each inspection, test or similar service shall include, but not be limited to:
 - a. Date of issue.
 - b. Project title and number.
 - c. Name, address and telephone number of testing agency.
 - d. Dates and locations of samples and tests or inspections.
 - e. Names of individuals making the inspection or test.
 - f. Designation of the Work and test method.
 - g. Identification of product and Specification Section.
 - h. Complete inspection or test data.
 - i. Test results and an interpretation of test results.
 - j. Location of sample or test in project.
 - k. Ambient conditions at the time of sample-taking and testing.
 - l. Professional opinion as to whether Work complies with Contract Documents requirements.
 - m. Name and signature of laboratory inspector.
 - n. Recommendations on retesting.

1.5 QUALITY ASSURANCE

- A. Qualification for Service Agencies: Engage inspection and testing service agencies, including independent testing laboratories, which are prequalified as complying with "Recommended Requirements for Independent Laboratory Qualification" by the American Council of Independent Laboratories, and which specialize in the types of inspections and tests to be performed.
 1. Each independent inspection and testing agency engaged on the Project shall be authorized by authorities having jurisdiction to operate in the State in which the Project is located.

1.6 TRADESMEN & WORKMANSHIP

- A. Ensure that tradesmen performing work at site are skilled and knowledgeable in methods and craftsmanship needed to produce required quality levels for workmanship in completed work. Remove and replace work which does not comply with workmanship standards as specified and as recognized in the construction industry for applications indicated. Remove and replace other work damaged or deteriorated by faulty workmanship or its replacement.

PART 2 - PRODUCTS (Not Applicable).

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

- A. General: Upon completion of inspection, testing, sample-taking and similar services, repair damaged construction and restore substrates and finishes to eliminate deficiencies, including deficiencies in visual qualities of exposed finishes. Comply with Contract Document requirements for "Cutting and Patching."
- B. Protect construction exposed by or for quality control service activities, and protect repaired construction.
- C. Repair and protection is the Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing or similar services.

3.2 REPLACEMENT OF WORK

- A. Within 24 hours after rejection of work pursuant to the General Conditions, remove all materials and equipment so rejected and immediately replace work, at the Contractor's cost, to the satisfaction of the Architect. Should the work of the Owner or other Contractors be damaged by such removal or replacement, the Contractor shall reimburse the Owner or other Contractors for all costs incurred for correcting damage.

END OF SECTION 01 40 00

SECTION 01 42 19 - REFERENCE STANDARDS AND DEFINITIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. Indicated: The term "indicated" refers to graphic representations, notes or schedules on the Drawings, or other Paragraphs or Schedules in the Specifications, and similar requirements in the Contract Documents. Where terms such as "shown," "noted," "scheduled," and "specified" are used, it is to help the reader locate the reference; no limitation on location is intended.
- C. Directed: Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean "directed by the Architect," "requested by the Architect," and similar phrases.
- D. Approve: The term "approved," where used in conjunction with the Architect's action on the Contractor's submittals, applications, and requests, is limited to the Architect's duties and responsibilities as stated in the Conditions of the Contract.
- E. Regulation: The term "Regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. Furnish: The term "furnish" is used to mean "supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations."
- G. Install: The term "install" is used to describe operations at project site including the actual "unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations."
- H. Provide: The term "provide" means "to furnish and install, complete and ready for the intended use."
- I. Installer: An "Installer" is the Contractor or an entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier for performance of a particular construction activity, including installation, erection, application, and similar operations. Installers are required to be experienced in the operations they are engaged to perform.

1. The term "experienced," when used with the term "Installer," means having a minimum of five previous projects similar in size and scope to this Project, being familiar with the special requirements indicated, and having complied with requirements of the authority having jurisdiction.
2. Trades: Use of titles such as "carpentry" is not intended to imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.
3. Assignment of Specialists: Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in the operations to be performed. The specialists must be engaged for those activities, and assignments are requirements over which the Contractor has no choice or option. Nevertheless, the ultimate responsibility for fulfilling Contract requirements remains with the Contractor.
 - a. This requirement shall not be interpreted to conflict with enforcement of building codes and similar regulations governing the Work. It is also not intended to interfere with local trade union jurisdictional settlements and similar conventions.

- J. Project Site is the space available to the Contractor for performance of construction activities, either exclusively or in conjunction with others performing other work as part of the Project. The extent of the Project Site is shown on the Drawings and may or may not be identical with the description of the land on which the Project is to be built.
- K. Testing Laboratories: A "testing laboratory" is an independent entity engaged to perform specific inspections or tests, either at the Project Site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

1.3 SPECIFICATION FORMAT AND CONTENT EXPLANATION

- A. Specification Format: These Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's 50 Division format and MASTERFORMAT numbering system.
- B. Specification Content: This Specification uses certain conventions in the use of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:
 1. Abbreviated Language: Language used in Specifications and other Contract Documents is the abbreviated type. Words and meanings shall be interpreted as appropriate. Words that are implied, but not stated shall be interpolated as the sense required. Singular words will be interpreted as plural and plural words interpreted as singular where applicable and the context of the Contract Documents so indicates.
 2. Imperative and streamlined language is used generally in the Specifications. Requirements expressed in the imperative mode are to be performed by the Contractor. At certain

locations in the text, for clarity, subjective language is used to describe responsibilities that must be fulfilled indirectly by the Contractor, or by others when so noted.

1.4 INDUSTRY STANDARDS

- A. **Applicability of Standards:** Except where the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. **Publication Dates:** Comply with the standard in effect as of the date of the Contract Documents.
- C. **Copies of Standards:** Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to that entity's construction activity. Copies of applicable standards are not bound with the Contract Documents.
 - 1. Where copies of standards are needed for performance of a required construction activity, the Contractor shall obtain copies directly from the publication source.
- D. **Abbreviations and Names:** Trade association names and titles of general standards are frequently abbreviated. Where such acronyms or abbreviations are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards generating organization, authority having jurisdiction, or other entity applicable to the context of the text provision. Refer to the "Encyclopedia of Associations," published by Gale Research Co., available in most libraries.

1.5 SUBMISSIONS

- A. For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the work.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01 42 19

SECTION 01 50 00 - TEMPORARY CONSTRUCTION FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division-01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies requirements for temporary services and facilities, including utilities, construction and support facilities, security and protection.

- 1. Pay for all fees and permits. Pay all usage costs required for temporary services.

- B. Temporary construction and support facilities required include but are not limited to:

- a. Field offices and storage sheds.
 - b. Sanitary facilities, including drinking water.
 - c. Light and Temporary Heat and Ventilation.
 - d. Telephone service.
 - e. Temporary enclosures, including building security.
 - f. Hoists.
 - g. Temporary Project identification signs and bulletin boards.
 - h. Waste disposal services, Rodent and pest control.
 - i. Construction aids and miscellaneous services and facilities.

- C. Security and protection facilities required include but are not limited to:

- a. Temporary fire protection.
 - b. Barricades, warning signs, lights.
 - c. Environmental protection.

1.3 DIVISION OF RESPONSIBILITIES

- A. Each Contractor is responsible for:

- a. Installation, operation, maintenance and removal of each temporary service or facility usually considered as its own normal construction activity, as well as the costs and use charges associated with each such service or facility.
 - b. Plug in electric power cords and extension cords, and supplementary plug in task lighting and special lighting necessary exclusively for its own activities.
 - c. Field offices, storage sheds and Waste disposal services.
 - d. Telephone service.
 - e. Hoisting requirements.
 - f. Secure lockup of its own tools, materials and equipment.

- g. Construction aids and miscellaneous services exclusively for its own work activities.

1.4 USE CHARGES

- A. Electric power from the Owner's existing system may be used.
- B. Other entities using temporary services and facilities include, but are not limited to:
 - a. Other non-prime Contractors.
 - b. The Owner's work forces.
 - c. The Architect and his consultants.
 - d. Testing Agencies
 - e. Personnel of government agencies.

1.5 QUALITY ASSURANCE

- A. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction, including but not limited to:
 - a. Building Code requirements.
 - b. Health and safety regulations.
 - c. Utility company regulations.
 - d. Police, Fire Department and Rescue Squad rules.
 - e. Environmental protection regulations.
- B. Standards: Comply with NFPA Code 241, "Building Construction and Demolition Operations", ANSI-A10 Series standards for "Safety Requirements for Construction and Demolition", and NECA Electrical Design Library "Temporary Electrical Facilities."
 - 1. Refer to "Guidelines for Bid Conditions for Temporary Job Utilities and Services", prepared jointly by AGC and ASC, for industry recommendations.
 - 2. Electrical Service: Comply with NEMA, NECA and UL standards and regulations for temporary electric service. Install service in compliance with the National Electric Code (NFPA 70), latest editions.
 - 3. Assigned responsibilities for installation and operation of temporary utilities are not intended to interfere with the normal application of trade regulations and union jurisdiction.
- C. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.6 PROJECT CONDITIONS

- A. Temporary Utilities: Prepare a schedule indicating dates for implementation and termination of each temporary utility. At the earliest feasible time, when acceptable to the Owner, change over from use of temporary service to use of the permanent service.

- B. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not overload facilities, or permit them to interfere with progress. Do not allow hazardous dangerous or unsanitary conditions, or public nuisances to develop or persist on the site.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Provide new materials; if acceptable to the Architect, undamaged previously used materials in serviceable condition may be used. Provide materials suitable for the use intended.
- B. Tarpaulins: Provide waterproof, fire-resistant, UL labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures provide translucent nylon reinforced laminated polyethylene or polyvinyl chloride fire retardant tarpaulins.
- C. Water: Provide potable water approved by local health authorities.

2.2 EQUIPMENT

- A. General: Provide new equipment; if acceptable to the Architect, undamaged, previously used equipment in serviceable condition may be used. Provide equipment suitable for use intended.
- B. Electrical Outlets: Provide properly configured NEMA polarized outlets to prevent insertion of 110-120 volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button and pilot light, for connection of power tools and equipment.
- C. Electrical Power Cords: Provide grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas where construction activities are in progress.
- D. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered glass enclosures, where exposed to breakage. Provide exterior fixtures where exposed to moisture.
- E. Temporary Toilet Units: Provide self-contained single-occupant toilet units of the chemical, aerated recirculation, or combustion type, properly vented and fully enclosed with a glass fiber reinforced polyester shell or similar nonabsorbent material.
- F. First Aid Supplies: Comply with governing regulations.
- G. Fire Extinguishers: Provide hand-carried, portable UL-rated, class "A" fire extinguishers for temporary offices and similar spaces. In other locations provide hand-carried, portable, UL-rated, class "ABC" dry chemical extinguishers, or a combination of extinguishers of NFPA recommended classes for the exposures.

1. Comply with NFPA 10 and 241 for classification, extinguishing agent and size required by location and class of fire exposure.

2.3 TEMPORARY HEAT

- A. The General Contractor shall provide temporary heating, equipment and fuel, when required for temporary protection of concrete, masonry finishes and other work including the work of other prime contracts, by methods meeting approval of the Architect in conformance with NFPA Pamphlet No. 241. Owner's electrical power shall not be used as primary source of heat energy.
- B. The General Contractor shall maintain proper ventilating as required and as necessary so that the structure will have the circulation of air necessary for proper curing and protection of the work.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.
- B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed, or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

- A. Temporary Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload protected disconnects, automatic ground-fault interrupters and main distribution switch gear.
 1. Except where overhead service must be used, install electric power service underground.
 2. Power Distribution System: Install wiring overhead, and rise vertically where least exposed to damage. Where permitted, wiring circuits not exceeding 125 Volts, AC 20 ampere rating, and lighting circuits may be nonmetallic sheathed cable where overhead and exposed for surveillance.

3.3 TEMPORARY CONSTRUCTION AND SUPPORT FACILITIES INSTALLATION

- A. Locate field offices, storage sheds, sanitary facilities and other temporary construction and support facilities for easy access.

1. Maintain temporary construction and support facilities until near Substantial Completion. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner.
- B. Provide incombustible construction for offices, shops and sheds located within the construction area, or within 30 feet of building lines. Comply with requirements of NFPA 241.
- C. Temporary Enclosures: Provide temporary enclosure for protection of construction in progress and completed, from exposure, foul weather, other construction operations and similar activities.
 1. Install tarpaulins securely, with incombustible wood framing and other materials. Close openings of 25 square feet or less with plywood or similar materials.
 2. Close openings through floor or roof decks and horizontal surfaces with load-bearing wood-framed construction.
 3. Where temporary wood or plywood enclosure exceeds 100 square feet in area, use UL-labeled fire-retardant treated material for framing and main sheathing.
 4. The Contractor shall provide constant protection against rain, wind, storms, frost or heat so as to maintain the work, materials, apparatus and fixtures free from damage. At the end of each day's work, cover work likely to be damaged.
 5. Wherever a Contractor provides openings through walls or slabs, each location shall be adequately protected at the end of each working day with temporary enclosures to make these areas tight. Openings through exterior walls shall be water tight.
- D. Temporary Lifts and Hoists: Provide facilities for hoisting materials and employees. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.
 1. The Contractor shall provide and operate all hoists and derricks and furnish and erect all ladders and scaffolding required by him and his subcontractors, constructed to afford proper protection to craftsmen, their work and other work in progress and previously executed. Hoists, derricks and other apparatus shall be equipped with safety devices required by law and shall be so placed as not to interfere with, or damage, any work or property.
- E. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg F (27 deg C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material in a lawful manner.

3.4 PROJECT SIGNS

- A. Signs needed to direct deliveries will be permitted with the approval of the Owner required before erection on the site.

3.5 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Temporary Fire Protection: Install and maintain temporary fire protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 "Standard for Portable Fire Extinguishers," and NFPA 241 "Standard for Safeguarding Construction, Alterations and Demolition Operations."
1. Locate fire extinguishers where convenient and effective for their intended purpose.
 2. Store combustible materials in containers in fire-safe locations.
 3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways and other access routes for fighting fires. Prohibit smoking in hazardous fire exposure areas.
 4. Provide supervision of welding operations, combustion type temporary heating units, and similar sources of fire ignition.
 5. No welding, cutting by torch, or Work utilizing or causing inflammable waste shall be done unless adequate fire protection is provided and maintained for the duration of the Work in the area or operations.
 6. No fires for any purpose will be permitted on the Project. Remove all refuse from the Owner's property.
- B. Barricades, Warning Signs and Lights: Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed provide lighting, including flashing red or amber lights.
- C. The Contractor shall provide barricades, guard lights and other appurtenances in the area of his operations for the protection of workmen and public as required by applicable regulations, and for the protection of streets, lighting, hydrants, walks, curbs and adjacent grounds and planting, for the duration of such operations. He shall bear the costs of damage caused by him, his Subcontractor or the employees of each. Warning lights shall be blinker type, battery or electrically operated. Open flame torches are not permitted.
- D. Environmental Protection: Provide protection, operate temporary facilities and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result. Avoid use of tools and equipment which produce harmful noise. Restrict use of noise making tools and equipment to hours that will minimize complaints from persons or firms near the site.

3.6 OPERATION, TERMINATION AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.

- B. Maintenance: Maintain facilities in good operating condition until removal.
- C. Termination and Removal: Unless the Architect requests that it be maintained longer, remove each temporary facility when the need has ended, or replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces and replace construction that cannot be satisfactorily repaired.
 - 1. Materials and facilities that constitute temporary facilities are property of the Contractor. The Owner reserves the right to take possession of Project identification signs.
 - 2. If the Contractor fails to carry out his responsibilities in providing temporary utilities, as set forth above, the Owner reserves the right to take action as he deems proper for the protection and conduct of the Work and to deduct the cost thereof from the amount due the Contractor.

END OF SECTION 01 50 00

SECTION 01 60 00 - MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements governing the Contractor's selection of products for use in the Project.
- B. The Contractor's Construction Schedule and the Schedule of Submittals are included under Section "Submittals."
- C. Standards: Refer to Section "Definitions and Standards" for applicability of industry standards to products specified.

1.3 DEFINITIONS

- A. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms. Such terms are self-explanatory and have well recognized meanings in the construction industry.
 - 1. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - a. "Named Products" are items identified by manufacturer's product name, including make or model designation, indicated in the manufacturer's published product literature, that is current as of the date of the Contract Documents.
 - b. "Foreign Products", as distinguished from "domestic products," are items substantially manufactured (50 percent or more of value) outside of the United States and its possessions; or produced or supplied by entities substantially owned (more than 50 percent) by persons who are not citizens of nor living within the United States and its possessions.
 - 2. "Materials" are products that are substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.

3. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections such as wiring or piping.

1.4 QUALITY ASSURANCE

- A. Source Limitations: To the fullest extent possible, provide products of the same kind, from a single source.
 1. When specified products are available only from sources that do not or cannot produce a quantity adequate to complete project requirements in a timely manner, consult with the Architect for a determination of the most important product qualities before proceeding. Qualities may include attributes relating to visual appearance, strength, durability, or compatibility. When a determination has been made, select products from sources that produce products that possess these qualities, to the fullest extent possible.
- B. Compatibility of Options: When the Contractor is given the option of selecting between two or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.
 1. Each prime Contractor is responsible for providing products and construction methods that are compatible with products and construction methods of other prime or separate Contractors.
 2. If a dispute arises between prime Contractors over concurrently selectable, but incompatible products, the Architect will determine which products shall be retained and which are incompatible and must be replaced.
- C. Foreign Product Limitations: Except under one or more of the following conditions, provide domestic products, not foreign products, for inclusion in the Work:
 1. No available domestic product complies with the Contract Documents.
 2. Domestic products that comply with Contract Document are only available at prices or terms that are substantially higher than foreign products that also comply with the Contract Documents.
- D. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products which will be exposed to view in occupied spaces or on the exterior.
 1. Labels: Locate required product labels and stamps on a concealed surface or, where required for observation after installation, on an accessible surface that is not conspicuous.
 2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface which is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:

- a. Name of product and manufacturer.
- b. Model and serial number.
- c. Capacity.
- d. Speed.
- e. Ratings.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store and handle products in accordance with the manufacturer's recommendations, using means and methods that will prevent damage, deterioration and loss, including theft.
 1. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.
 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.
 3. Deliver products to the site in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting and installing.
 4. Inspect products upon delivery to ensure compliance with the Contract Documents, and to ensure that products are undamaged and properly protected.
 5. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.
 6. Store heavy materials away from the Project structure in a manner that will not endanger the supporting construction.
 7. Store products subject to damage by the elements above ground, under cover in a weathertight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, unused at the time of installation.
 1. Provide products complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.

2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.

B. Product Selection Procedures: Product selection is governed by the Contract Documents and governing regulations, not by previous Project experience. Procedures governing product selection include the following:

1. Proprietary Specification Requirements: Where only a single product or manufacturer is named, provide the product indicated. No substitutions will be permitted.
2. Semiproprietary Specification Requirements: Where three (3) or more products or manufacturers are named, provide one of the products indicated. No substitutions will be permitted.
 - a. Where products or manufacturers are specified by name, accompanied by the term "or equal," or "or approved equal" comply with the Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.
3. Non-Proprietary Specifications: When the Specifications list products or manufacturers that are available and may be incorporated in the Work, but do not restrict the Contractor to use of these products only, the Contractor may propose any available product that complies with Contract requirements. Comply with Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.
4. Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.
5. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements, and are recommended by the manufacturer for the application indicated. General overall performance of a product is implied where the product is specified for a specific application.
 - a. Manufacturer's recommendations may be contained in published product literature, or by the manufacturer's certification of performance.
6. Compliance with Standards, Codes and Regulations: Where the Specifications only require compliance with an imposed code, standard or regulation, select a product that complies with the standards, codes or regulations specified.
7. Visual Matching: Where Specifications require matching an established Sample, the Architect's decision will be final on whether a proposed product matches satisfactorily.
 - a. Where no product available within the specified category matches satisfactorily and also complies with other specified requirements, comply with provisions of the Contract Documents concerning "substitutions" for selection of a matching product in another product category, or for noncompliance with specified requirements.
8. Visual Selection: Where specified product requirements include the phrase "...as selected from manufacturer's standard colors, patterns, textures..." or a similar phrase, select a product

and manufacturer that complies with other specified requirements. The Architect will select the color, pattern and texture from the product line selected.

PART 3 - EXECUTION

3.1 INSTALLATION OF PRODUCTS:

- A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other Work.
- B. Fiber, plastic, lead plugs and shields and any device using wood screws are not acceptable as fastening devices to plaster, tile, concrete or masonry. Use expansion bolts or driven devices in solid construction and toggle bolts in hollow construction.
- C. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

3.2 PROTECTION

- A. Each Prime Contractor shall be responsible for proper care and protection, and shall protect and be responsible for damage to his work or materials from the date of the Contract until final payment is made and shall make good, without cost to the Owner, all damage or loss that may occur during this period. All materials which may be affected by the weather shall be covered and protected to keep them free from damage while they are being transported to and stored on the site. Should any material be found defective or in any way contrary to the contract, this material, no matter in what stage of completion, may be rejected by the Architect and shall be removed from the premises at once.

END OF SECTION 01 60 00

SECTION 01 70 00 - PROJECT CLOSEOUT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for project closeout, including but not limited to:
 - a. Inspection procedures.
 - b. Project Record Document and Operating and Maintenance Manual submittal.
 - c. Submittal of warranties.
 - d. Final cleaning.
- B. Other administrative submittals required for project closeout (Final Payment) are enumerated in the Division 01 Section, Applications for Payment.
- C. Closeout requirements for specific construction activities are included in the appropriate Sections in Divisions 02 through 49.

1.3 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.
 - 1. In the Application for Payment that coincides with, or follows, when Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
 - a. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.
 - 2. Advise Owner of pending insurance change-over requirements.
 - 3. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.
 - 4. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities; include occupancy permits, operating certificates and similar releases.

5. Submit record drawings, maintenance manuals, final damage or settlement survey, property survey, and similar final record information.
6. Deliver tools, spare parts, extra stock, and similar items.
7. Complete final clean up requirements, including touch-up painting. Touch-up and otherwise repair and restore marred exposed finishes.

- B. Inspection Procedures: On receipt of a request for inspection, the Architect will either proceed with inspection or advise the Contractor of unfilled requirements. The Architect will prepare the Certificate of Substantial Completion following inspection, or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.
- a. The Architect will repeat inspection when requested and assured that the Work has been substantially completed.
 - b. Results of the completed inspection will form the basis of requirements for final acceptance.

1.4 FINAL ACCEPTANCE

- A. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.
1. Contractors Affidavit of Payments, Debts and Claims. AIA Document G706.
 2. Submit Contractors Affidavit of Release of liens AIA DocumentG706A.
 3. Submit consent of surety to final payment. AIA Document G707.
 4. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
 5. Submit a certified copy of the Architect's final inspection list (punch list) of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, and the list has been endorsed and dated by the Architect.
 6. Submit Contractor's statement that his final application, as presented, is the final bill and no other claims will be presented.
 7. Submit a final liquidated damages settlement statement.
 8. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
- B. Reinspection Procedure: The Architect will reinspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except items whose completion has been delayed because of circumstances acceptable to the Architect.

1. Upon completion of reinspection, the Architect will prepare a certificate of final acceptance, or advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
2. If necessary, reinspection will be repeated, but at the expense of the Contractor who will reimburse the Owner for these services by the Architect.

1.5 RECORD DOCUMENT SUBMITTALS

- A. General: Do not use record documents for construction purposes; protect from deterioration and loss in a secure, fire-resistive location; provide access to record documents for the Architect's reference during normal working hours.
- B. Record Drawings: Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
 - a. Mark record sets with red erasable pencil; use other colors to distinguish between variations in separate categories of the Work.
 - b. Mark new information that is important to the Owner, but was not shown on Contract Drawings or Shop Drawings.
 - c. Note related Change Order numbers where applicable.
 - d. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.
- C. Record Specifications: Maintain one complete copy of the Project Manual, including addenda, and one copy of other written construction documents such as Change Orders and modifications issued in printed form during construction. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation. Note related record drawing information and Product Data. Upon completion of the Work, submit record Specifications to the Architect for the Owner's records.
- D. Record Product Data: Maintain one copy of each Product Data submittal. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the site, and from the manufacturer's installation instructions and recommendations. Give particular attention to concealed products and portions of the Work which cannot otherwise be readily discerned later by direct observation. Note related Change Orders and mark-up of record drawings and Specifications. Upon completion of mark-up, submit complete set of record Product Data to the Architect for the Owner's records.
- E. Record Sample Submitted: Immediately prior to the date or dates of Substantial Completion, the Contractor will meet at the site with the Architect and the Owner's personnel to determine which of the submitted Samples that have been maintained during progress of the Work are to be transmitted to the Owner for record purposes. Comply with delivery to the Owner's Sample storage area.

- F. Miscellaneous Record Submittals: Refer to other Specification Sections for requirements of miscellaneous record-keeping and submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference. Submit to the Architect for the Owner's records.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: General cleaning during construction is required by the General Conditions and included in Section "Temporary Facilities".
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.
 - 1. Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion.
 - a. Remove labels that are not permanent labels.
 - b. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films and similar foreign substances. Restore reflective surfaces to their original reflective condition.
 - c. Clean the site, of rubbish, litter and other foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth even-textured surface.
- C. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.
- D. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.
 - 1. Where extra materials of value remaining after completion of associated Work have become the Owner's property, arrange for disposition of these materials as directed.

3.2 WARRANTIES & GUARANTEES

- A. In connection with Contractor's correction of warranted work which has failed, remove and replace other work of project which has been damaged as a result of such failure, or must be removed and replaced to provide access for correction of warranted work.

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- B. The Contractor shall provide a written warranty covering all work performed by him for a period of one year.

END OF SECTION 01 70 00

SECTION 01 73 29 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for cutting and patching.
- B. Refer to other Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
- C. Demolition of selected portions of the building for alterations is included in Section "Selective Demolition."

1.3 SUBMITTALS

- A. Cutting and Patching Proposal: Where approval of procedures for cutting and patching is required before proceeding, submit a proposal describing procedures well in advance of the time cutting and patching will be performed and request approval to proceed. Include the following information, as applicable, in the proposal:
 - 1. Describe the extent of cutting and patching required and how it is to be performed; indicate why it cannot be avoided.
 - 2. Describe anticipated results in terms of changes to existing construction; include changes to structural elements and operating components as well as changes in the building's appearance and other significant visual elements.
 - 3. List products to be used and firms or entities that will perform Work.
 - 4. Indicate dates when cutting and patching is to be performed.
 - 5. List utilities that will be disturbed or affected, including those that will be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.
 - 6. Where cutting and patching involves addition of reinforcement to structural elements, submit details and engineering calculations to show how reinforcement is integrated with the original structure.

7. Approval by the Architect to proceed with cutting and patching does not waive the Architect's right to later require complete removal and replacement of a part of the Work found to be unsatisfactory.

1.4 QUALITY ASSURANCE

- A. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would reduce their load-carrying capacity or load-deflection ratio.
 1. Obtain approval of the cutting and patching proposal before cutting and patching the following structural elements:
 - a. Bearing and retaining walls.
 - b. Structural concrete.
 - c. Structural steel.
 - d. Lintels.
 - e. Timber and primary wood framing.
 - f. Structural decking.
 - g. Stair systems.
 - h. Miscellaneous structural metals.
 - i. Equipment supports.
 - j. Piping, ductwork, vessels and equipment.
- B. Operational and Safety Limitations: Do not cut and patch operating elements or safety related components in a manner that would result in reducing their capacity to perform as intended, or result in increased maintenance, or decreased operational life or safety.
 1. Obtain approval of the cutting and patching proposal before cutting and patching the following operating elements or safety related systems:
 - a. Primary operational systems and equipment.
 - b. Air or smoke barriers.
 - c. Water, moisture, or vapor barriers.
 - d. Membranes and flashings.
 - e. Fire protection systems.
 - f. Noise and vibration control elements and systems.
 - g. Control systems.
 - h. Communication systems.
 - i. Electrical wiring systems.
- C. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces, in a manner that would, in the Architect's opinion, reduce the building's aesthetic qualities, or result in visual evidence of cutting and patching. Remove and replace Work cut and patched in a visually unsatisfactory manner.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Use materials that are identical to existing materials. If identical materials are not available or cannot be used where exposed surfaces are involved, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials whose installed performance will equal or surpass that of existing materials.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Before cutting existing surfaces, examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed. Take corrective action before proceeding, if unsafe or unsatisfactory conditions are encountered.
 - 1. Before proceeding, meet at the site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

3.2 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.
- C. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Take all precautions necessary to avoid cutting existing pipe, conduit or ductwork serving the building, but scheduled to be removed or relocated until provisions have been made to bypass them.

3.3 PERFORMANCE

- A. General: A Contractor, subcontractor or sub-subcontractor requiring changes in existing work shall have such changes performed by the trades skilled in performing the particular work and such changes shall be at the expense of the Contractor, subcontractor or sub-subcontractor requiring the change. Review changes with the Architect prior to proceeding with the work and include installation of such reinforcement of the work as the Architect may direct.
- B. Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.

1. Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition.
 - C. Cutting: Cut existing construction using methods least likely to damage elements to be retained or adjoining construction. Where possible review proposed procedures with the original installer; comply with the original installer's recommendations.
 1. In general, where cutting is required use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots neatly to size required with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - D. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
 1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
 2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
 3. Firestopping and draftstopping.
 - a. Where fire rated and/or smoke barrier construction (walls, floors or ceilings) are penetrated, all penetrations shall be fire-safed and sealed using appropriate fire rated materials and approved methods.
 - b. Where non-fire rated construction (walls, floors or ceilings) are penetrated, the penetration shall be sealed tight with approved draftstopping materials.
- 3.4 CLEANING
- A. Thoroughly clean areas and spaces where cutting and patching is performed or used as access. Remove completely paint, mortar, oils, putty and items of similar nature. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied. Restore damaged pipe covering to its original condition.

END OF SECTION 01 73 29

SECTION 02 41 10 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Demolition and removal of various building elements as indicated on the drawings.
 - 2. Demolition and removal of existing above grade improvements.
 - 3. Demolition and removal of existing below grade improvements.
 - 4. Demolition of all work as may be required to produce a finished product, whether indicated on the drawings or not.

1.3 DEFINITIONS

- A. Remove: Remove and legally dispose of items except those indicated to be reinstalled, salvaged, or to remain the Owner's property.
- B. Existing to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by the A/E, items may be removed to a suitable, protected storage location during selective demolition and then cleaned and reinstalled in their original locations.

1.4 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: Engage an experienced firm that has successfully completed selective demolition Work similar to that indicated for this Project.
- B. Regulatory Requirements: Comply with governing EPA notification regulations before starting selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

1.5 PROJECT CONDITIONS

- A. Owner will occupy portions of the building immediately adjacent to selective demolition area. Conduct selective demolition so that Owner's operations will not be disrupted. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.
- B. Owner assumes no responsibility for actual condition of buildings to be selectively demolished.
 - 1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Asbestos: It is not expected that asbestos will be encountered in the Work. If any materials suspected of containing asbestos are encountered, do not disturb the materials. Immediately notify the A/E and the Owner.
- D. Lead-Based Paint: It is expected that lead-based paint will be encountered in the Work. Refer to Specifications for proper handling and disposal.
- E. Storage or sale of removed items or materials on-site will not be permitted.

1.6 SCHEDULING

- A. Arrange selective demolition schedule so as not to interfere with Owner's on-site operations.

1.7 WARRANTY

- A. Existing Special Warranty: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.1 REPAIR MATERIALS

- A. Use repair materials identical to existing materials.
 - 1. Where identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
 - 2. Use materials whose installed performance equals or surpasses that of existing materials.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. When unanticipated mechanical, electrical, or structural elements that conflict with the intended function or design are encountered, investigate and measure the nature and extent of the conflict. Promptly submit a written report to the A/E.
- D. Survey the condition of the building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of the structure or adjacent structures during selective demolition.
- E. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 UTILITY SERVICES

- A. Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Do not interrupt existing utilities serving occupied or operating facilities, except when authorized in writing by Owner and authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and to governing authorities.
 - a. Provide not less than 72 hours' notice to Owner if shutdown of service is required during changeover.
- B. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services serving building to be selectively demolished.
 - 1. Arrange to shut off indicated utilities with utility companies.
 - 2. Where utility services are required to be removed, relocated, or abandoned, provide bypass connections to maintain continuity of service to other parts of the building before proceeding with selective demolition.
 - 3. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal the remaining portion of pipe or conduit after bypassing.

- C. Utility Requirements: Refer to Authority Having Jurisdiction for shutting off, disconnecting, removing, and sealing or capping utility services. Do not start selective demolition work until utility disconnecting and sealing have been completed and verified in writing.

3.3 PREPARATION

- A. Conduct demolition operations and remove debris to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.
 - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

3.4 PROTECTION

- A. Existing Facilities: Protect adjacent walkways, loading docks, building entries, and other building facilities during demolition operations. Maintain exits from existing buildings.
- B. Temporary Protection: Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction and as indicated. Comply with requirements in Division 01 Section "Temporary Facilities and Controls."
 - 1. Protect adjacent buildings and facilities from damage due to demolition activities.
 - 2. Protect existing site improvements, appurtenances, and landscaping to remain.
 - 3. Erect a plainly visible fence around drip line of individual trees or around perimeter drip line of groups of trees to remain.
 - 4. Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - 5. Provide protection to ensure safe passage of people around building demolition area and to and from occupied portions of adjacent buildings and structures.
 - 6. Protect walls, windows, roofs, and other adjacent exterior construction that are to remain and that are exposed to building demolition operations.
 - 7. Erect and maintain dustproof partitions and temporary enclosures to limit dust, noise, and dirt migration to occupied portions of adjacent buildings.
- C. Remove temporary barriers and protections where hazards no longer exist. Where open excavations or other hazardous conditions remain, leave temporary barriers and protections in place.

3.5 POLLUTION CONTROLS

- A. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before start of selective demolition.

3.6 SELECTIVE DEMOLITION

- A. Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete Work within limitations of governing regulations and as follows:
1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition work above each floor or tier before disturbing supporting members on lower levels.
 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. To minimize disturbance of adjacent surfaces, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 4. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 5. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 6. Locate selective demolition equipment throughout the structure and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 7. Dispose of demolished items and materials promptly. On-site storage or sale of removed items is prohibited.
 8. Return elements of construction and surfaces to remain to condition existing before start of selective demolition operations.

3.7 PATCHING AND REPAIRS

- A. Promptly patch and repair holes and damaged surfaces caused to adjacent construction by selective demolition operations.
- B. Patching is specified in Division 01 Section "Cutting and Patching."
- C. Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.
- D. Restore exposed finishes of patched areas and extend finish restoration into adjoining construction to remain in a manner that eliminates evidence of patching and refinishing.

3.8 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

END OF SECTION 02 41 10

SECTION 02 83 19 – LEAD-BASED PAINT MANAGEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SCOPE OF LBP MANAGEMENT WORK

- A. Lead-based paint (LBP) was found to be associated with both interior and exterior components, refer to division 00 for environmental reports for exact locations.
- B. The Lead-Based Paint Management Work, “or LBP Work”, shall be defined as the Work that encompasses the handling of lead-based paint (LBP), materials to which LBP is applied, and any waste and contamination resulting from the handling or disturbance of LBP, or any other lead-bearing surface.
- C. It is not the intent of this section to define or require a LBP abatement project or LBP hazard abatement project as may be defined by the New Jersey Lead Hazard Evaluation and Abatement Subcode (N.J.A.C. 5:17). Further, these Contract Documents are not meant to require the Contractor to retain a New Jersey-licensed lead abatement contractor to complete the LBP Work as specified. This statement, nor any other in the Contract Documents, does not limit the Contractor’s responsibility to act in a manner pursuant to N.J.A.C. 5:17, or any other regulations, depending upon conditions resulting from the Contractor’s performance of the Work and other activities, however.
- D. This section pertains to all Work for this project involving the disturbance of paint, and related dust/debris. All painted surfaces are likely to contain some concentration of lead. There are also surfaces that may be contaminated with lead containing dust and/or debris. As part of the performance of this Work, incorporate appropriate lead paint/dust testing, containment, worker protection and disposal procedures.
- E. Perform all work necessary to carry out the proper removal and disposal of all lead-contaminated waste, in accordance with all applicable laws, codes, rules and regulations and in accordance with the requirements set forth in this section.
- F. The scope of the LBP Work shall include those activities necessary to assure compliance with applicable worker protection and waste disposal standards, and to prevent release of fugitive lead-containing debris and dust generated from the LBP to the surrounding property. These Specifications delineate no specific activities, but rather that the Contractor provide a plan sufficient to achieve these requirements.

PART 2 - JOB CONDITIONS

2.1 CONTRACTOR RESPONSIBILITY

- A. Provide investigation as necessary to properly plan LBP Management Work.

2.2 PHASING

- A. Phase the LBP Work in accordance with the overall demolition Work phasing. The LBP Work is not meant to be an activity separate from the overall demolition process, but rather an essential element of the demolition work to allow for the demolition and any other related work to be undertaken with proper LBP management.

2.3 METHODS

- A. Provide work methods pursuant to applicable standards and good industry practice. The Contractor's attention is particularly brought to OSHA requirements relative to torch cutting controls and use of HEPA-fitted cutting tool options under certain conditions.

PART 3 - REGULATORY REQUIREMENTS, REFERENCE STANDARDS

- 3.1 Include provisions for the proper containment, removal, and disposal of lead-containing waste, as well as appropriate worker protection in accordance with all applicable laws, codes, rules and regulations pertaining to lead. Applicable guidelines and standards listed in this Scope of Work include, but are not necessarily limited to:

- A. Code of Federal Regulations (CFR) Publications:

29 CFR, Part 1926.62 Lead Exposure in Construction; Interim Final Rule Vol. 58, No. 84

40 CFR 61, Subpart A General Provision (Hazardous Air Pollutants Listing)

40 CFR 61.152 Standard for Waste Manufacturing, Demolition, Renovations, Spraying and Fabricating Operations.

40 CFR 241 Guidelines for the Land Disposal of Solid Wastes

40 CFR 257 Criteria for Classification of Solid Waste

40 CFR 261 Identification and Listing of Hazardous Wastes

40 CFR 262 Standards Applicable to Generators of Hazardous Waste

- B. Current NJDEP requirements, N.J.A.C. 7:26-1 et.seq.

PART 4 - WORKER PROTECTION

4.1 GENERAL

- A. Treat any surface coating and/or underlying substrate containing lead in any concentration that will be disturbed as a potential lead hazard to workers in accordance with 29 CFR 1926.62, Lead Exposure in Construction. This standard applies to all construction work in which lead in any concentration is present.
- B. Maintain a program in accordance with 29 CFR 1926.62 at minimum and shall be responsible for protecting and training employees on worker safety, health hazards, etc. relating to lead. This program shall be incorporated into the written safety plan. The Contractor should consult the following publications and/or competent environmental counsel:

OSHA – 3079 Respiratory Protection

OSHA – 3142 Lead in Construction

PART 5 - MANAGEMENT PROCEDURES

5.1 WORK PLANS

- A. Prepare task specific Work Plan prior to starting Work detailing how the Contractor shall accomplish each task of work related to the disturbance of any LBP surface or contaminated material. Prepare the Work Plan with the needs, logistics and constraints of the individual job in mind, taking into account such factors as paint removal method, worker safety, proximity to other personnel and/or the public, protection of the environment including containment and air monitoring requirements, condition of the underlying substrate.
- B. Prepare the Plan to include methods of minimizing and containing the generation of all dust, including dust generated while cleaning up construction and demolition debris. These methods may include such techniques as wet mopping and/or wiping, HEPA vacuuming or the use of a negative pressure ventilation system where lead dust is generated. Once the Work has been completed and debris has been properly removed from the site, all surfaces shall be free and clear of visible dust. All work areas shall be cleaned on a daily basis at the end of each shift. Particular attention to be paid to fugitive dust which may arise from the site and contaminate adjacent properties.
- C. At no time perform any Work which may impact upon lead-containing material until authorization from the Owner or its authorized representative is obtained.

PART 6 - PROTECTION OF ADJACENT AREAS AND THE ENVIRONMENT

6.1 CONTROL OF CONTAMINATION ON-SITE

- A. If it's determined by visual identification that the exterior of this property, or adjacent properties have been contaminated as a result of the Contractor's work, clean the affected premises at no charge to the Owner. The Contractor shall be responsible for all costs incurred by this clean-up activity.

6.2 DISPOSAL REQUIREMENTS

- A. Perform sampling and analysis as may be required to assure proper and legal handling of the waste. If any chemical analysis or sampling is performed by or on behalf of the Contractor, its Transporter, or its Treatment Storage and Disposal Facility (TAD), a copy of such analysis must be provided to the Owner at no additional cost to the Owner. (Note: As prevailing law may allow, painted metal may be designated as recyclable and disposed of at a scrap metal facility for reuse or resale).
- B. Ensure that waste disposal Transporter (be it the Contractor itself or a Subcontractor) warrants and represents possession of all permits and/or licenses required under the Resource Conservation's and Recovery Act (RCRA) as well as any state or local permits or licenses required for removal, repackaging, transportation and disposal of hazardous waste.
- C. Treat and dispose hazardous waste materials removed by the waste disposal subcontractor at an Environmental Protection Agency (EPA) permitted Treatment, Storage and Disposal Facility.
- D. Treat and dispose of all wastes, drums, and other items removed hereunder within sixty (60) days after removal from the site. Ensure that the waste disposal Subcontractor provides completes shipping documents for all hazardous wastes removed, which contain the information required under 40 CFR Part 262 Subpart B (hereinafter the "Manifest Form") and NJDEP requirements. Such certificates shall include references to the Manifest Form for the shipment as well as address and EPA identification numbers for the generator facility.
- E. Ensure that all TAD facilities or transporters which the waste disposal Transporter intends to use to treat and/or dispose of hazardous waste are approved for use by the Owner prior to any delivery of waste by the waste disposal Transporter to such TAD facility. The Owner reserves the right to inspect the waste disposal Transporters equipment storage facility and TAD facility at any time prior to or subsequent to the award of this contract.
- F. Should any problems arise regarding the TAD facility chosen to accept the waste for treatment and disposal that would require the return of waste to the Owner, or should such TAD facility have violated any environmental regulation which would result in regulatory enforcement action, ensure that the waste disposal Subcontractor immediately notifies the Contractor in writing of such situation, identifies an alternate TAD and obtains written approval from the Owner for disposal at such TAD.
- G. Ensure that the waste disposal Transporter provides completed shipping documents, hereinafter referred to as "Bills of Lading", for all non-hazardous waste removal from Owner property. A Bill of Lading must accompany each waste shipment and must include information regarding the quantity and type of waste, the waste transporter name, and the date of removal from the property.

6.3 TRANSPORTATION REQUIREMENTS

- A. Arrange that the waste disposal Transporter providing waste transportation services possesses a valid Waste Hauler's permit issued pursuant to the NJDEP regulations.
- B. Package and transport of all waste shall be in accordance with the applicable sections of the Department of Transportation (DOT) regulations.

END OF SECTION 02 83 19

SECTION 03 30 00 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 RELATED SECTIONS

- A. Division 09 Sections for Various Final Floor Finishes

1.3 SUMMARY

- A. This Section specifies cast-in place concrete, including formwork, reinforcing, mix design, placement procedures, and finishes.

1.4 SUBMITTALS

- A. General: Submit the following according to Conditions of the Contract and Division 1 Specification Sections.
- B. Product data for proprietary materials and items, including reinforcement and forming accessories, admixtures, patching compounds, waterstops, joint systems, curing compounds, dry-shake finish materials, and others if requested by Architect.
- C. Shop drawings for reinforcement detailing fabricating, bending, and placing concrete reinforcement. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures" showing bar schedules, stirrup spacing, bent bar diagrams, and arrangement of concrete reinforcement. Include special reinforcing required for openings through concrete structures.

1.5 QUALITY ASSURANCE

- A. It is the responsibility of the Contractor to provide a properly cured concrete slab within the required moisture levels for on-grade, as well as elevated slabs. The moisture content must meet the requirements for the installation of the final floor finishes, as referenced in the appropriate Division 09 Sections. The Contractor shall meet with the finish floor applicators to discuss the requirements, prior to the placement of any slabs, to ascertain the moisture level requirements. If the moisture content, at the time of final floor finish application, is not within the limitations set by the flooring manufacturer for the product and adhesives, the Contractor shall be responsible for any and all remediation steps to bring the slab into compliance.

- B. Codes and Standards: Comply with provisions of the following codes, specifications, and standards, except where more stringent requirements are shown or specified:
 - 1. American Concrete Institute (ACI) 301, "Specifications for Structural Concrete for Buildings."
 - 2. ACI 318, "Building Code Requirements for Reinforced Concrete."
 - 3. Concrete Reinforcing Steel Institute (CRSI) "Manual of Standard Practice."
- C. Concrete Testing Service: Engage a testing agency acceptable to Architect to perform material evaluation tests and to design concrete mixes.
- D. Materials and installed work may require testing and retesting at any time during progress of Work. Tests, including retesting of rejected materials for installed Work, shall be done at Contractor's expense.
- E. Project Conditions:
 - 1. Protection of Footings Against Freezing: Cover completed work at footing level with sufficient temporary or permanent cover as required to protect footings and adjacent subgrade against possibility of freezing; maintain cover for time period as necessary.
 - 2. Protect adjacent finish materials against spatter during concrete placement.

PART 2 - PRODUCTS

2.1 FORM MATERIALS

- A. Forms for Exposed Finish Concrete: Plywood, metal, metal-framed plywood faced, or other acceptable panel-type materials to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings.
- B. Form Ties: Factory-fabricated, adjustable-length, removable or snap-off metal form ties designed to prevent form deflection and to prevent spalling of concrete upon removal. Provide units that will leave no metal closer than **1-1/2 inches (38 mm)** to the plane of the exposed concrete surface.
 - 1. Provide ties that, when removed, will leave holes not larger than **1 inch (25 mm)** in diameter in the concrete surface.

2.2 REINFORCING MATERIALS

- A. Reinforcing Bars: **ASTM A 615 Grade 60 (ASTM A 615M Grade 400)**, deformed.
- B. Steel Wire: ASTM A 82, plain, cold-drawn steel.

- C. Welded Wire Fabric: ASTM A 185, welded steel wire fabric.
- D. Deformed-Steel Welded Wire Fabric: ASTM A 497.
- E. Supports for Reinforcement: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Use wire bar-type supports complying with CRSI specifications.
 - 1. For slabs-on-grade, use supports with sand plates or horizontal runners where base material will not support chair legs.

2.3 CONCRETE MATERIALS

- A. Portland Cement: ASTM C 150, Type I.
 - 1. Use one brand of cement throughout Project unless otherwise acceptable to Architect.
- B. Fly Ash: ASTM C 618, Type F.
- C. Normal-Weight Aggregates: ASTM C 33 and as specified. Provide aggregates from a single source for exposed concrete.
- D. Lightweight Aggregates: ASTM C 330.
- E. Water: Potable.
- F. Admixtures, General: Provide concrete admixtures that contain not more than 0.1 percent chloride ions.
- G. Air-Entraining Admixture: ASTM C 260, certified by manufacturer to be compatible with other required admixtures.
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Air-Tite, Cormix Construction Chemicals.
 - b. Air-Mix or Perma-Air, Euclid Chemical Co.
 - c. Darex AEA or Daravair, W.R. Grace & Co.
 - d. MB-VR or Micro-Air, Master Builders, Inc.
 - e. Sealtight AEA, W.R. Meadows, Inc.
 - f. Sika AER, Sika Corp.
- H. Water-Reducing Admixture: ASTM C 494, Type A.
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Chemtard, ChemMasters Corp.
 - b. PSI N, Cormix Construction Chemicals.
 - c. Eucon WR-75, Euclid Chemical Co.
 - d. WRDA, W.R. Grace & Co.

- e. Pozzolith Normal or Polyheed, Master Builders, Inc.
- f. Metco W.R., Metalcrete Industries.
- g. Prokrete-N, Prokrete Industries.
- h. Plastocrete 161, Sika Corp.

I. High-Range Water-Reducing Admixture: ASTM C 494, Type F or Type G.

- 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Super P, Anti-Hydro Co., Inc.
 - b. Cormix 200, Cormix Construction Chemicals.
 - c. Eucon 37, Euclid Chemical Co.
 - d. WRDA 19 or Daracem, W.R. Grace & Co.
 - e. Rheobuild or Polyheed, Master Builders, Inc.
 - f. Superslump, Metalcrete Industries.
 - g. PSPL, Prokrete Industries.
 - h. Sikament 300, Sika Corp.

J. Water-Reducing, Accelerating Admixture: ASTM C 494, Type E, and containing not more than 0.1 percent chloride ions.

- 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Accelguard 80-Euclid Chemical.
 - b. Pozzolith High Early-Master Builders.
 - c. Gilco Accelerator, Gifford-Hill American Admixtures.

K. Water-Reducing, Retarding Admixture: ASTM C 494, Type D.

- 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Eucon Retarder 75, Euclid Chemical Co.
 - b. Daratard-17, W.R. Grace & Co.
 - c. Pozzolith R, Master Builders, Inc.
 - d. Protard, Prokrete Industries.
 - e. Plastiment, Sika Corporation.

2.4 RELATED MATERIALS

- A. Reglets: Where sheet flashing or bituminous membranes are terminated in reglets, provide reglets of not less than **0.0217- inch- (0.46-mm-)** thick galvanized sheet steel. Fill reglet or cover face opening to prevent intrusion of concrete or debris.
- B. Dovetail Anchor Slots: Hot-dip galvanized sheet steel, not less than **0.0336 inch thick (0.76 mm)** with bent tab anchors. Fill slot with temporary filler or cover face opening to prevent intrusion of concrete or debris.

- C. Waterstops: Provide flat, dumbbell-type or centerbulb-type waterstops at construction joints and other joints as indicated. Size to suit joints.
- D. Rubber Waterstops: Corps of Engineers CRD-C 513.
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - a. The Burke Co.
 - b. Progress Unlimited.
 - c. Williams Products, Inc.
- E. Vapor Barrier: Provide vapor barrier that is resistant to deterioration when tested according to ASTM E 154, as follows:
 - 1. Fiber reinforced Polyethylene sheet not less than **15 mils** thick.
- F. Liquid Membrane-Forming Curing Compound: Liquid-type membrane-forming curing compound complying with ASTM C 309, Type I, Class A. Moisture loss not more than 0.55 kg/sq. m when applied at **200 sq. ft./gal (4.9 sq. m/L)**.
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. A-H 3 Way Sealer, Anti-Hydro Co., Inc.
 - b. Spartan-Cote, The Burke Co.
 - c. Conspec #1, Conspec Marketing & Mfg. Co.
 - d. Sealco 309, Cormix Construction Chemicals.
 - e. Day-Chem Cure and Seal, Dayton Superior Corp.
 - f. Eucocure, Euclid Chemical Co.
 - g. Horn Clear Seal, A.C. Horn, Inc.
 - h. L&M Cure R, L&M Construction Chemicals, Inc.
 - i. Masterkure, Master Builders, Inc.
 - j. CS-309, W.R. Meadows, Inc.
 - k. Seal N Kure, Metalcrete Industries.
 - l. Kure-N-Seal, Sonneborn-Chemrex.
 - m. Stontop CS2, Stonhard, Inc.
- G. Bonding Agent: Polyvinyl acetate or acrylic base.
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
 - a. Polyvinyl Acetate (Interior Only):
 - 1) Superior Concrete Bonder, Dayton Superior Corp.
 - 2) Euco Weld, Euclid Chemical Co.
 - 3) Weld-Crete, Larsen Products Corp.
 - 4) Everweld, L&M Construction Chemicals, Inc.
 - 5) Herculox, Metalcrete Industries.
 - 6) Ready Bond, Symons Corp.
 - b. Acrylic or Styrene Butadiene:
 - 1) Acrylic Bondcrete, The Burke Co.

- 2) Strongbond, Conspec Marketing and Mfg. Co.
- 3) Day-Chem Ad Bond, Dayton Superior Corp.
- 4) SBR Latex, Euclid Chemical Co.
- 5) Daraweld C, W.R. Grace & Co.
- 6) Hornweld, A.C. Horn, Inc.
- 7) Everbond, L&M Construction Chemicals, Inc.
- 8) Acryl-Set, Master Builders Inc.
- 9) Intralok, W.R. Meadows, Inc.
- 10) Acrylpave, Metalcrete Industries.
- 11) Sonocrete, Sonneborn-Chemrex.
- 12) Stonlock LB2, Stonhard, Inc.
- 13) Strong Bond, Symons Corp.

2.5 PROPORTIONING AND DESIGNING MIXES

- A. Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 301. For the trial batch method, use an independent testing agency acceptable to Architect for preparing and reporting proposed mix designs.
 1. Do not use the same testing agency for field quality control testing.
 2. Limit use of fly ash to not exceed 25 percent of cement content by weight.
- B. Submit written reports to Architect of each proposed mix for each class of concrete at least 15 days prior to start of Work. Do not begin concrete production until proposed mix designs have been reviewed by Architect.
- C. Design mixes to provide normal weight concrete with the following properties as indicated on drawings and schedules:
 1. **4000 psi (20.7 MPa)**, 28-day compressive strength.
- D. Water-Cement Ratio: Provide concrete for following conditions with maximum water-cement (W/C) ratios as follows:
 1. Subjected to freezing and thawing: W/C 0.50.
- E. Slump Limits: Proportion and design mixes to result in concrete slump at point of placement as follows:
 1. Ramps, slabs, and sloping surfaces: Not more than **3 inches (75 mm)**.
 2. Reinforced foundation systems: Not less than **1 inch (25 mm)** and not more than **3 inches (75 mm)**.

3. Concrete containing high-range water-reducing admixture (superplasticizer): Not more than **8 inches (200 mm)** after adding admixture to site-verified **2 - 3 inch (50 - 75 mm)** slump concrete.
 4. Other concrete: Not more than **4 inches (100 mm)**.
- F. Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant, as accepted by Architect. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Architect before using in Work.

2.6 ADMIXTURES

- A. Use water-reducing admixture or high-range water-reducing admixture (superplasticizer) in concrete, as required, for placement and workability.
- B. Use accelerating admixture in concrete slabs placed at ambient temperatures below **50 deg F (10 deg C)**.
- C. Use high-range water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs, architectural concrete, parking structure slabs, concrete required to be watertight, and concrete with water-cement ratios below 0.50.
- D. Use air-entraining admixture in exterior exposed concrete unless otherwise indicated. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having total air content with a tolerance of plus or minus 1-1/2 percent within the following limits:
 1. Concrete structures and slabs exposed to freezing and thawing, deicer chemicals, or hydraulic pressure:
 - a. 4.5 percent (moderate exposure); 5.5 percent (severe exposure) for **1-1/2 inch (38 mm)** maximum aggregate.
 - b. 4.5 percent (moderate exposure); 6.0 percent (severe exposure) for **1 inch (25 mm)** maximum aggregate.
 2. Other concrete not exposed to freezing, thawing, or hydraulic pressure, or to receive a surface hardener: 2 to 4 percent air.
- E. Use admixtures for water reduction and set accelerating or retarding in strict compliance with manufacturer's directions.

2.7 CONCRETE MIXING

- A. Ready-Mixed Concrete: Comply with requirements of ASTM C 94, and as specified.
 1. When air temperature is between **85 deg F (29 deg C)** and **90 deg F (32 deg C)**, reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above **90 deg F (32 deg C)**, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 GENERAL

- A. Coordinate the installation of joint materials, vapor retarder/barrier, and other related materials with placement of forms and reinforcing steel.

3.2 FORMS

- A. General: Design, erect, support, brace, and maintain formwork to support vertical, lateral, static, and dynamic loads that might be applied until concrete structure can support such loads. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation, and position. Maintain formwork construction tolerances and surface irregularities complying with the following ACI 347 limits:
- B. Construct forms to sizes, shapes, lines, and dimensions shown and to obtain accurate alignment, location, grades, level, and plumb work in finished structures. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required in the Work. Use selected materials to obtain required finishes. Solidly butt joints and provide backup at joints to prevent cement paste from leaking.
- C. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like for easy removal.
- D. Provide temporary openings for clean-outs and inspections where interior area of formwork is inaccessible before and during concrete placement. Securely brace temporary openings and set tightly to forms to prevent losing concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- E. Chamfer exposed corners and edges as indicated, using wood, metal, PVC, or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.
- F. Provisions for Other Trades: Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, recesses, and chases from trades providing such items. Accurately place and securely support items built into forms.
- G. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, or other debris just before placing concrete. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

3.3 VAPOR RETARDER/BARRIER INSTALLATION

- A. General: Place vapor retarder/barrier sheeting in position with longest dimension parallel with direction of pour.
- B. Lap joints **6 inches (150 mm)** and seal with manufacturer's recommended mastic or pressure-sensitive tape.

3.4 PLACING REINFORCEMENT

- A. General: Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars," for details and methods of reinforcement placement and supports and as specified.
 - 1. Avoiding cutting or puncturing vapor retarder/barrier during reinforcement placement and concreting operations. Repair damages before placing concrete.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other materials that reduce or destroy bond with concrete.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as approved by Architect.
- D. Place reinforcement to maintain minimum coverages as indicated for concrete protection. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.
- E. Install welded wire fabric in lengths as long as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

3.5 JOINTS

- A. Construction Joints: Locate and install construction joints so they do not impair strength or appearance of the structure, as acceptable to Architect.
- B. Provide keyways at least **1-1/2 inches (38 mm)** deep in construction joints in walls and slabs and between walls and footings. Bulkheads designed and accepted for this purpose may be used for slabs.
- C. Place construction joints perpendicular to main reinforcement. Continue reinforcement across construction joints except as indicated otherwise. Do not continue reinforcement through sides of strip placements.
- D. Use bonding agent on existing concrete surfaces that will be joined with fresh concrete.
- E. Waterstops: Provide waterstops in construction joints as indicated. Install waterstops to form continuous diaphragm in each joint. Support and protect exposed waterstops during progress of Work. Field-fabricate joints in waterstops according to manufacturer's printed instructions.

- F. Isolation Joints in Slabs-on-Grade: Construct isolation joints in slabs-on-grade at points of contact between slabs-on-grade and vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
 - 1. Joint fillers and sealants are specified in Division 7 Section "Joint Sealants."
- G. Contraction (Control) Joints in Slabs-on-Grade: Construct contraction joints in slabs-on-grade to form panels of patterns as shown. Use saw cuts **1/8 inch (3 mm)** wide by one-fourth of slab depth or inserts **1/4 inch (6 mm)** wide by one-fourth of slab depth, unless otherwise indicated.
 - 1. If joint pattern is not shown, provide joints not exceeding **15 ft. (4.5 m)** in either direction and located to conform to bay spacing wherever possible (at column centerlines, half bays, third bays).
 - 2. Joint fillers and sealants are specified in Division 7 Section "Joint Sealants."

3.6 INSTALLING EMBEDDED ITEMS

- A. General: Set and build into formwork anchorage devices and other embedded items required for other work that is attached to or supported by cast-in-place concrete. Use setting drawings, diagrams, instructions, and directions provided by suppliers of items to be attached.
- B. Install reglets to receive top edge of foundation sheet waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, relieving angles, and other conditions.
- C. Install dovetail anchor slots in concrete structures as indicated on drawings.
- D. Forms for Slabs: Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and contours in finished surfaces. Provide and secure units to support screed strips using strike-off templates or compacting-type screeds.

3.7 PREPARING FORM SURFACES

- A. General: Coat contact surfaces of forms with an approved, nonresidual, low-VOC, form-coating compound before placing reinforcement.
- B. Do not allow excess form-coating material to accumulate in forms or come into contact with in-place concrete surfaces against which fresh concrete will be placed. Apply according to manufacturer's instructions.
 - 1. Coat steel forms with a nonstaining, rust-preventative material. Rust-stained steel formwork is not acceptable.

3.8 CONCRETE PLACEMENT

- A. Inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or cast in. Notify other trades to permit installation of their work.
- B. General: Comply with ACI 304, "Guide for Measuring, Mixing, Transporting, and Placing Concrete," and as specified.
- C. Deposit concrete continuously or in layers of such thickness that no new concrete will be placed on concrete that has hardened sufficiently to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as specified. Deposit concrete to avoid segregation at its final location.
- D. Placing Concrete in Forms: Deposit concrete in forms in horizontal layers no deeper than **24 inches (600 mm)** and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.
 1. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete complying with ACI 309.
 2. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations no farther than the visible effectiveness of the machine. Place vibrators to rapidly penetrate placed layer and at least **6 inches (150 mm)** into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mix to segregate.
- E. Placing Concrete Slabs: Deposit and consolidate concrete slabs in a continuous operation, within limits of construction joints, until completing placement of a panel or section.
 1. Consolidate concrete during placement operations so that concrete is thoroughly worked around reinforcement, other embedded items and into corners.
 2. Bring slab surfaces to correct level with a straightedge and strike off. Use bull floats or darbies to smooth surface free of humps or hollows. Do not disturb slab surfaces prior to beginning finishing operations.
 3. Maintain reinforcing in proper position on chairs during concrete placement.
- F. Cold-Weather Placement: Comply with provisions of ACI 306 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
- G. When air temperature has fallen to or is expected to fall below **40 deg F (4 deg C)**, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than **50 deg F (10 deg C)** and not more than **80 deg F (27 deg C)** at point of placement.
 1. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.

2. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise accepted in mix designs.
- H. Hot-Weather Placement: When hot weather conditions exist that would impair quality and strength of concrete, place concrete complying with ACI 305 and as specified.
1. Cool ingredients before mixing to maintain concrete temperature at time of placement to below 90 deg F (32 deg C). Mixing water may be chilled or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 2. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedding in concrete.
 3. Fog spray forms, reinforcing steel, and subgrade just before placing concrete. Keep subgrade moisture uniform without puddles or dry areas.
 4. Use water-reducing retarding admixture when required by high temperatures, low humidity, or other adverse placing conditions, as acceptable to Architect.

3.9 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: Provide a rough-formed finish on formed concrete surfaces not exposed to view in the finished Work or concealed by other construction. This is the concrete surface having texture imparted by form-facing material used, with tie holes and defective areas repaired and patched, and fin and other projections exceeding 1/4 inch (6 mm) in height rubbed down or chipped off.
- B. Smooth-Formed Finish: Provide a smooth-formed finish on formed concrete surfaces exposed to view or to be covered with a coating material applied directly to concrete, or a covering material applied directly to concrete, such as waterproofing, dampproofing, veneer plaster, painting, or another similar system. This is an as-cast concrete surface obtained with selected form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch defective areas with fins and other projections completely removed and smoothed.

3.10 MONOLITHIC SLAB FINISHES

- A. Float Finish: Apply float finish to monolithic slab surfaces to receive trowel finish and other finishes as specified; slab surfaces to be covered with membrane or elastic waterproofing, membrane or elastic roofing, or sand-bed terrazzo; and where indicated.
1. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating, using float blades or float shoes only, when surface water has disappeared, or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power-driven floats or by hand-floating if area is small or inaccessible to power units. Finish surfaces to tolerances of F(F) 18 (floor flatness)

and F(L) 15 (floor levelness) measured according to **ASTM E 1155 (ASTM E 1155M)**. Cut down high spots and fill low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.

- B. Trowel Finish: Apply a trowel finish to monolithic slab surfaces exposed to view and slab surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile, paint, or another thin film-finish coating system.
1. After floating, begin first trowel-finish operation using a power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance, and finish surfaces to tolerances of F(F) 20 (floor flatness) and F(L) 17 (floor levelness) measured according to **ASTM E 1155 (ASTM E 1155M)**. Grind smooth any surface defects that would telegraph through applied floor covering system.

3.11 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Mix, place, and cure concrete as specified to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete Work.

3.12 CONCRETE CURING AND PROTECTION

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. In hot, dry, and windy weather protect concrete from rapid moisture loss before and during finishing operations with an evaporation-control material. Apply according to manufacturer's instructions after screeding and bull floating, but before power floating and troweling.
- B. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Weather permitting, keep continuously moist for not less than 7 days.
- C. Curing Methods: Cure concrete by curing compound, by moist curing, by moisture-retaining cover curing, or by combining these methods, as specified.
- D. Provide moisture curing by the following methods:
1. Keep concrete surface continuously wet by covering with water.
 2. Use continuous water-fog spray.
 3. Cover concrete surface with specified absorptive cover, thoroughly saturate cover with water, and keep continuously wet. Place absorptive cover to provide coverage of concrete surfaces and edges, with a **4 inch (100 mm)** lap over adjacent absorptive covers.

- E. Provide moisture-retaining cover curing as follows:
 - 1. Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width with sides and ends lapped at least **3 inches (75 mm)** and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
- F. Apply curing compound on exposed interior slabs and on exterior slabs, walks, and curbs as follows:
 - 1. Apply curing compound to concrete slabs as soon as final finishing operations are complete (within 2 hours and after surface water sheen has disappeared). Apply uniformly in continuous operation by power spray or roller according to manufacturer's directions. Recoat areas subjected to heavy rainfall within 3 hours after initial application. Maintain continuity of coating and repair damage during curing period.
 - 2. Do not use membrane curing compounds on surfaces to be covered with finish materials applied directly to concrete.
- G. Curing Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces, by moist curing with forms in place for the full curing period or until forms are removed. If forms are removed, continue curing by methods specified above, as applicable.

3.13 REMOVING FORMS

- A. General: Formwork not supporting weight of concrete, such as sides of beams, walls, columns, and similar parts of the work, may be removed after cumulatively curing at not less than **50 deg F (10 deg C)** for 24 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form-removal operations, and provided curing and protection operations are maintained.
- B. Formwork supporting weight of concrete, such as beam soffits, joists, slabs, and other structural elements, may not be removed in less than 14 days or until concrete has attained at least 75 percent of design minimum compressive strength at 28 days. Determine potential compressive strength of in-place concrete by testing field-cured specimens representative of concrete location or members.
- C. Form-facing material may be removed 4 days after placement only if shores and other vertical supports have been arranged to permit removal of form-facing material without loosening or disturbing shores and supports.

3.14 REUSING FORMS

- A. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-coating compound as specified for new formwork.

- B. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joint to avoid offsets. Do not use patched forms for exposed concrete surfaces except as acceptable to Architect.

3.15 CONCRETE SURFACE REPAIRS

- A. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removing forms, when acceptable to Architect.
 - 1. Cut out honeycombs, rock pockets, voids over **1/4 inch (6 mm)** in any dimension, and holes left by tie rods and bolts down to solid concrete but in no case to a depth less than **1 inch (25 mm)**. Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water, and brush-coat the area to be patched with bonding agent. Place patching mortar before bonding agent has dried.
 - 2. For surfaces exposed to view, blend white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Provide test areas at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.
- B. Repairing Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Architect. Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning. Flush out form tie holes and fill with dry-pack mortar or precast cement cone plugs secured in place with bonding agent.
 - 1. Repair concealed formed surfaces, where possible, containing defects that affect the concrete's durability. If defects cannot be repaired, remove and replace the concrete.
- C. Repairing Unformed Surfaces: Test unformed surfaces, such as monolithic slabs, for smoothness and verify surface tolerances specified for each surface and finish. Correct low and high areas as specified. Test unformed surfaces sloped to drain for trueness of slope and smoothness by using a template having the required slope.
 - 1. Repair finished unformed surfaces containing defects that affect the concrete's durability. Surface defects include crazing and cracks in excess of **0.01 inch (0.25 mm)** wide or that penetrate to the reinforcement or completely through nonreinforced sections regardless of width, spalling, popouts, honeycombs, rock pockets, and other objectionable conditions.
 - 2. Correct high areas in unformed surfaces by grinding after concrete has cured at least 14 days.
 - 3. Correct low areas in unformed surfaces during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete. Proprietary underlayment compounds may be used when acceptable to Architect.

4. Repair defective areas, except random cracks and single holes not exceeding **1 inch (25 mm)** in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose reinforcing steel with at least **3/4 inch (19 mm)** clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials to provide concrete of same type or class as original concrete. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.

3.16 QUALITY CONTROL TESTING DURING CONSTRUCTION

- A. General: Employ a testing agency to perform tests and to submit test reports.
- B. Sampling and testing for quality control during concrete placement may include the following, as directed by Architect.
 1. Sampling Fresh Concrete: ASTM C 172, except modified for slump to comply with ASTM C 94.
 - a. Slump: ASTM C 143; one test at point of discharge for each day's pour of each type of concrete; additional tests when concrete consistency seems to have changed.
 - b. Air Content: ASTM C 173, volumetric method for lightweight or normal weight concrete; ASTM C 231, pressure method for normal weight concrete; one for each day's pour of each type of air-entrained concrete.
 - c. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is **40 deg F (4 deg C)** and below, when **80 deg F (27 deg C)** and above, and one test for each set of compressive-strength specimens.
 - d. Compression Test Specimen: ASTM C 31; one set of four standard cylinders for each compressive-strength test, unless otherwise directed. Mold and store cylinders for laboratory-cured test specimens except when field-cured test specimens are required.
 - e. Compressive-Strength Tests: ASTM C 39; one set for each day's pour exceeding **5 cu. yd. (4 cu. m)** plus additional sets for each **50 cu. yd. (38 cu. m)** more than the first **25 cu. yd. (19 cu. m)** of each concrete class placed in any one day; one specimen tested at 7 days, two specimens tested at 28 days, and one specimen retained in reserve for later testing if required.
 2. When frequency of testing will provide fewer than five strength tests for a given class of concrete, conduct testing from at least five randomly selected batches or from each batch if fewer than five are used.
 3. When total quantity of a given class of concrete is less than **50 cu. yd. (38 cu. m)**, Architect may waive strength testing if adequate evidence of satisfactory strength is provided.
 4. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.
 5. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive strength test results equal or exceed specified compressive strength and no

individual strength test result falls below specified compressive strength by more than **500 psi (3.4 MPa)**.

- C. Test results will be reported in writing to Architect, Structural Engineer, ready-mix producer, and Contractor within 24 hours after tests. Reports of compressive strength tests shall contain the Project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-day tests and 28-day tests.
- D. Additional Tests: The testing agency will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by Architect. Testing agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed.

END OF SECTION 03 30 00

SECTION 04 01 00 - MASONRY RESTORATION AND CLEANING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 DESCRIPTION OF WORK

- A. Extent of masonry restoration work is indicated on drawings.
- B. Masonry restoration work includes the following:
 - 1. Repairing damaged masonry.
 - 2. Cleaning exposed masonry surfaces.
 - 3. Repointing mortar joints.

1.3 QUALITY ASSURANCE

- A. Restoration Specialist: Work must be performed by a firm having not less than 5 years successful experience in comparable masonry restoration projects and employing personnel skilled in the restoration processes and operations indicated.
- B. Source of Materials: Obtain materials for masonry restoration from a single source for each type of material required(cement, sand etc.) to ensure match of quality, color, pattern and texture.

1.4 SUBMITTALS

- A. Product Data: Submit manufacturers' technical data for each product indicated including recommendations for their application and use. Include test reports and certifications substantiating that products comply with requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Carefully pack, handle, and ship masonry units and accessories strapped together in suitable packs or pallets or in heavy cartons. Unload and handle to prevent chipping and breakage.
- B. Deliver other materials to site in manufacturer's original and unopened containers and packaging, bearing labels as to type and names of products and manufacturers.

- C. Protect masonry restoration materials during storage and construction from wetting by rain, snow or ground water, and from staining or intermixture with earth or other types of materials.
- D. Protect grout, mortar and other materials from deterioration by moisture and temperature. Store in a dry location or in waterproof containers. Keep containers tightly closed and away from open flames. Protect liquid components from freezing. Comply with manufacturer's recommendations for minimum and maximum temperature requirements for storage.

1.6 PROJECT CONDITIONS

- A. Clean masonry surfaces only when air temperatures are 40 deg.F (4 deg.C) and above and will remain so until masonry has dried out, but for not less than 7 days after completion of cleaning.
- B. Do not repoint mortar joints or repair masonry unless air temperatures are between 40 deg.F (4 deg.C) and 80 deg.F (27 deg.C) and will remain so for at least 48 hours after completion of work.
- C. Prevent grout or mortar used in repointing and repair work from staining face of surrounding masonry and other surfaces. Remove immediately grout and mortar in contact with exposed masonry and other surfaces.
- D. Protect sills, ledges and projections from mortar droppings.

1.7 SEQUENCING/SCHEDULING

- A. Perform masonry restoration work in the following sequence:
 - 1. Repair existing masonry including replacing existing masonry with new masonry materials.
 - 2. Rake-out existing mortar from joints.
 - 3. Repoint existing mortar joints of masonry.
 - 4. Clean existing masonry surfaces.
 - 5. Point existing mortar joints of masonry indicated to be restored.

PART 2 - PRODUCTS

2.1 MASONRY MATERIALS

- A. Face Brick and Accessories: Provide face brick and accessories, including units for lintels, arches, corners, and other special ground, cut, or sawed shapes where required to complete masonry restoration work.

1. Provide units with color, surface texture and size to match existing brick work and with physical properties not less than those determined from preconstruction testing, of selected existing units.

2.2 MORTAR MATERIALS

A. Portland Cement: ASTM C 150, Type I.

1. For stonework and other masonry indicated, provide non-staining white cement complying with staining requirement of ASTM C 91 for not more than 0.03% water soluble alkali.

B. Hydrated Lime: ASTM C 207, Type S.

C. Quicklime: ASTM C5, Non-hydraulic type.

D. Aggregate for Mortar: ASTM C 144, except for joints less than 1/4" use aggregate graded with 100% passing the No. 16 sieve.

E. Mortar: ASTM C387 type N. Provide mortar for face brick and accessories to match original mortar in color, texture, strength and hardness (density and porosity).

F. Testing: Determine existing mortar mix constituents and ratios by analysis. Review laboratory evaluations with Architect before proceeding with the work. Match color of existing mortar by use of aggregates matching original aggregate color where possible. Use inorganic coloring pigments if satisfactory color match cannot be attained with natural materials.

G. Water: Clean, free of oils, acids, alkalis and organic matter.

H. Integral Waterproofing: For mortar shall be a non-alkaline stearate base agent and shall be the product of a manufacturer who can attest the satisfactory performance thereof in other installations.

I. Grouting Mortar: Shall be D.J. Grouting Mortar as manufactured by Standard Dry Wall Products, New Eagle, PA, or equal. Color to match existing.

J. Cleaning Solvent: Toluene mineral spirits.

K. Bonding Agent Admixture: Acryl 60 as manufactured by Standard Dry Wall Products, or approved equal.

2.3 CLEANING MATERIALS AND EQUIPMENT

A. Water for Cleaning: Clean, potable, free of oils, acids, alkalis, salts, and organic matter.

B. Warm Water: Heat water to temperature of 140 deg.F-180 deg.F (60 deg.C-82 deg.C).

C. Brushes: Fiber bristle only.

- D. Spray Equipment: Provide equipment for controlled spray application of water and chemical cleaners, if any, at rates indicated for pressure, measured at spray tip, and for volume.
- E. For spray application of heated water provide equipment capable of maintaining temperature, at flow rates indicated, between 140 deg. and 180 deg.F (60 deg. and 82 deg.C).

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

- A. Inspection: Examine areas and conditions under which masonry restoration work is to be conducted and notify Owner of conditions detrimental to proper and timely completion of the work. Do not proceed with the work until satisfactory conditions have been adequately corrected.
- B. Discrepancies: In the event of discrepancy, immediately notify the Architect.
- C. Repointing is required wherever hairline or larger cracks have occurred, where jointing is loose or missing or otherwise defective.
 - 1. Loose, broken or cracked mortar.
 - 2. Deteriorated, disintegrated or soft mortar.
 - 3. Hollow and shell joints.
 - 4. Joints where mortar is separated. (This will be determined by using a thin blade pen knife. If the blade can be shoved in 3/16" or more, the joint will be considered defective.)
 - 5. Where mortar is missing.

3.2 REPOINTING EXISTING MASONRY

- A. Joint Raking:
 - 1. Rake out mortar from joints to depths equal to 2-1/2 times their widths but not less than 1/2" or less than that required to expose sound, unweathered mortar.
 - 2. Remove defective mortar from existing joints to a depth of at least 3/4" or as necessary to reach solid backing. Cut out joints square to fully expose joint sides and remove all loose or deteriorated mortar from all brick or cast stone edges. Where cut-outs exceed 3/4" depth, reduce depths to approximately 1/2" with mortar fill preparatory to the pointing. If no backing exists, pack oakum or backer rod solidly and tightly into joints to a distance of approximately 1" back from surface. Remove dust and loose materials by brushing or with water or air-jet.

3. Remove mortar from masonry surfaces within raked-out joints to provide reveals with square backs and to expose masonry for contact with pointing mortar. Brush, vacuum or flush joints to remove dirt and loose debris.
4. Do not spall edges of masonry units or widen joints. Replace any masonry units which become damaged with units matching existing.
5. Cut out old mortar by hand with chisel and mallet, unless otherwise indicated.
6. Power operated rotary hand saws and grinders will be permitted but only on specific written approval of Architect based on submission by Contractor of a satisfactory quality control program and demonstrated ability of operators to use tools without damage to masonry. Quality control program shall include provisions for supervising performance and preventing damage due to worker fatigue.

B. Joint Pointing:

1. Rinse masonry joint surfaces with water to remove any dust and mortar particles. Time application of rinsing so that, at time of pointing, excess water has evaporated or run off, and joint surfaces are damp but free of standing water.
2. Apply first layer of pointing mortar to areas where existing mortar was removed to depths greater than surrounding areas. Apply in layers not greater than 3/8" until a uniform depth is formed. Compact each layer thoroughly and allow to become thumbprint-hard before applying next layer.
3. After joints have been filled to a uniform depth, place remaining pointing mortar in 3 layers with each of first and second layers filling approximately 2/5 of joint depth and third layer the remaining 1/5. Fully compact each layer and allow to become thumbprint hard before applying next layer. Where existing bricks have rounded edges recess final layer slightly from face. Take care not to spread mortar over edges onto exposed masonry surfaces, or to featheredge mortar.
4. When mortar is thumbprint hard, tool joints to match original appearance of joints, unless otherwise indicated. Remove excess mortar from edge of joint by brushing.
5. Cure mortar by maintaining in a damp condition for not less than 72 hours.
 - a. Where repointing work precedes cleaning of existing masonry allow mortar to harden not less than 30 days before beginning cleaning work.

3.3 FINAL CLEANING

- A. Promptly as work proceeds and upon completion, remove all excess mortar, smears, droppings.
- B. After mortar has fully hardened thoroughly clean exposed masonry surfaces of excess mortar and foreign matter using stiff nylon or bristle brushes and clean water, spray applied at low pressure (less than 1000 psi).

- C. Sweep up and remove daily all sand, cleaning compounds and mixtures, dirt, debris and rubbish.
- D. Allow mortar to fully harden for approximately 30 days after completion of work, then thoroughly clean exposed masonry surfaces of excess mortar and foreign matter using stiff nylon or bristle brushes and clean water under normal pressure.
- E. Use of metal scrapers or brushes will not be permitted.
- F. Use of acid or alkali cleaning agents will not be permitted.

END OF SECTION 04 01 00

SECTION 04 20 00 - UNIT MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Concrete unit masonry.
 - 2. Decorative concrete masonry.

1.3 SUBMITTALS

- A. Product data for each different masonry unit, accessory, and other manufactured product specified.

1.4 QUALITY ASSURANCE

- A. Fire-Resistance Ratings: Where indicated, provide materials and construction identical to those of assemblies with fire resistance ratings determined per ASTM E 119 by a testing and inspecting agency, by equivalent concrete masonry thickness, or by another means, as acceptable to authorities having jurisdiction.
- B. Single-Source Responsibility for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from one source and by a single manufacturer for each different product required.
- C. Single-Source Responsibility for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from one manufacturer for each cementitious component and from one source or producer for each aggregate.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store masonry units on elevated platforms, under cover, and in a dry location to prevent their deterioration or damage due to moisture, temperature changes, contaminants, corrosion, and other causes. If units become wet, do not install until they are in an air-dried condition.
- B. Store cementitious materials on elevated platforms, under cover, and in a dry location.

- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- D. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.6 PROJECT CONDITIONS

- A. Protection of Masonry: During erection, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
 - 1. Extend cover a minimum of **24 inches (600 mm)** down both sides and hold cover securely in place.
- B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least 3 days after building masonry walls or columns.
- C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
 - 1. Protect base of walls from rain-splashed mud and mortar splatter by coverings spread on ground and over wall surface.
 - 2. Protect sills, ledges, and projections from mortar droppings.
- D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen subgrade or setting beds. Remove and replace unit masonry damaged by frost or freezing conditions. Comply with the following requirements:
 - 1. Cold-Weather Construction: When the ambient temperature is within the limits indicated, use the following procedures:
 - a. **40 to 32 deg F (4 to 0 deg C)**: Heat mixing water or sand to produce mortar temperatures between **40 and 120 deg F (4 and 49 deg C)**.
 - b. **32 to 25 deg F (0 to -4 deg C)**: Heat mixing water and sand to produce mortar temperatures between **40 and 120 deg F (4 and 49 deg C)**. Heat grout materials to produce grout temperatures between **40 and 120 deg F (4 and 49 deg C)**. Maintain mortar and grout above freezing until used in masonry.
 - c. **25 to 20 deg F (-4 to -7 deg C)**: Heat mixing water and sand to produce mortar temperatures between **40 and 120 deg F (4 and 49 deg C)**. Heat grout materials to produce grout temperatures between **40 and 120 deg F (4 and 49 deg C)**. Maintain mortar and grout above freezing until used in masonry. Heat masonry units to **40 deg F (4 deg C)** if grouting. Use heat on both sides of walls under construction.
 - d. **20 deg F (-7 deg C) and Below**: Heat mixing water and sand to produce mortar temperatures between **40 and 120 deg F (4 and 49 deg C)**. Heat grout materials to produce grout temperatures between **40 and 120 deg F (4 and 49 deg C)**. Maintain mortar and grout above freezing until used in masonry. Heat masonry units to **40 deg F (4 deg C)**. Provide enclosures and use heat on both sides of walls under construction to maintain temperatures above **32 deg F (0 deg C)** within the enclosures.
 - 2. Cold-Weather Protection: When the mean daily temperature is within the limits indicated, provide the following protection:

- a. **40 to 25 deg F (4 to -4 deg C)**: Cover masonry with a weather-resistant membrane for 48 hours after construction.
 - b. **25 to 20 deg F (-4 to -7 deg C)**: Cover masonry with insulating blankets or provide enclosure and heat for 48 hours after construction to prevent freezing. Install wind breaks when wind velocity exceeds **15 mi./h (25 km/h)**.
 - c. **20 deg F (-7 deg C)** and Below: Provide enclosure and heat to maintain temperatures above **32 deg F (0 deg C)** within the enclosure for 48 hours after construction.
3. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is **40 deg F (4 deg C)** and above and will remain so until masonry has dried out, but not less than 7 days after completion of cleaning.
- E. Hot-Weather Requirements: Protect unit masonry work when temperature and humidity conditions produce excessive evaporation of water from mortar and grout. Provide artificial shade and wind breaks and use cooled materials as required. Do not apply mortar to substrates with temperatures of **100 deg F (38 deg C)** and above.

PART 2 - PRODUCTS

2.1 CONCRETE MASONRY UNITS

- A. General: Provide shapes indicated and as follows for each form of concrete masonry unit required.
1. Provide special shapes for lintels, corners, jambs, sash, control joints, headers, bonding, and other special conditions.
 2. Provide bullnose units for outside corners, unless otherwise indicated.
- B. Integral Water Repellent: Provide units made with integral water repellent for exposed units and where indicated.
1. Integral Water Repellent: Liquid polymeric, integral water-repellent admixture that does not reduce flexural bond strength. Units made with integral water repellent, when tested as a wall assembly made with mortar containing integral water-repellent manufacturer's mortar additive according to ASTM E 514, with test period extended to 24 hours, show no visible water or leaks on the back of test specimen.
 - a. Products: Subject to compliance with requirements, provide one of the following:
 - 1) Addiment Incorporated; Block Plus W-10.
 - 2) Grace Construction Products, a unit of W. R. Grace & Co. - Conn.; Dry-Block.
 - 3) Master Builders, Inc.; Rheopel.
- C. Concrete Masonry Units: ASTM C 90 and as follows:
1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 1900 psi.
 2. Solid Loadbearing Block: ASTM C 90 and as follows: (Below grade and wherever else solid C.M.U. is indicated.)
 3. Weight Classification: Medium Weight.
 4. Size: Manufactured to the actual dimensions indicated on Drawings within tolerances specified in the applicable referenced ASTM specification.

5. Special Shapes: As indicated on the drawings, bullnose units for outside corners unless otherwise noted.
6. Exposed Faces: Manufacturer's standard color and texture, unless otherwise indicated.

D. Decorative Concrete Masonry Units: ASTM C 90 and as follows:

1. Size: Manufactured to dimensions indicated.
2. Finish: Exposed faces of the following general description matching color, pattern, and texture of Architect's sample.
 - a. Normal-weight aggregate, groundface, color to match Benjamin Moore 2107-20 mocha brown.
3. Integral Water Repellent: Provide units produced with liquid polymeric, integral water-repellent admixture that does not reduce flexural bond strength. Units made with integral water repellent, when tested as a wall assembly made with mortar containing integral water-repellent manufacturer's mortar additive according to ASTM E 514, with test period extended to 24 hours, show no visible water or leaks on the back of the test specimen.
 - a. Product: Subject to compliance with requirements, provide units made with "Dry-Block" by W.R. Grace & Co.

2.2 CONCRETE LINTELS

- A. General: Provide either concrete or masonry lintels, at Contractor's option, complying with requirements below.
- B. Concrete Lintels: Precast units made from concrete matching concrete masonry units in color, texture, and compressive strength and with reinforcing bars indicated or required to support loads indicated. Cure precast lintels by same method used for concrete masonry units.
- C. Concrete Lintels: Precast or formed-in-place concrete lintels complying with requirements in Division 3 Section "Cast-in-Place Concrete."

2.3 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Portland Cement-Lime Mix: Packaged blend of portland cement complying with ASTM C 150, Type I or Type III, and hydrated lime complying with ASTM C 207.
- D. Aggregate for Mortar: ASTM C 144; except for joints less than **1/4 inch (6.5 mm)**, use aggregate graded with 100 percent passing the **No. 16 (1.18 mm)** sieve.
 1. Colored-Mortar Aggregates: Natural-colored sand or ground marble, granite, or other sound stone, as required to match Architect's sample.

- E. Aggregate for Grout: ASTM C 404.
- F. Water-Repellent Admixture: Liquid water-repellent mortar admixture intended for use with concrete masonry units, containing integral water repellent by same manufacturer.
- G. Water: Potable.

2.4 JOINT REINFORCEMENT

- A. General: Provide joint reinforcement formed from the following:
 - 1. Galvanized carbon-steel wire, coating class as follows:
 - a. ASTM A 153, Class B-2, for both interior and exterior walls.
- B. Description: Welded-wire units prefabricated with deformed continuous side rods and plain cross rods into straight lengths of not less than **10 feet (3 m)**, with prefabricated corner and tee units, and complying with requirements indicated below:
 - 1. Wire Diameter for Side Rods: **9 gauge**.
 - 2. Wire Diameter for Cross Rods: **9 gauge**.
- C. For single-wythe masonry, provide type as follows with single pair of side rods:
 - 1. Truss design with continuous diagonal cross rods spaced not more than **16 inches (407 mm)** o.c.

2.5 ADJUSTABLE ANCHORS FOR CONNECTING TO STRUCTURAL FRAME

- A. General: Provide 2-piece assemblies as described below, allowing vertical or horizontal differential movement between wall and frame parallel to plane of wall but resisting tension and compression forces perpendicular to it.
 - 1. For anchorage to concrete, provide manufacturer's standard anchors with dovetail anchor section formed from sheet metal and triangular-shaped wire tie section sized to extend within **1 inch (25 mm)** of masonry face.
 - 2. For anchorage to steel framing, provide manufacturer's standard triangular-shaped wire tie section sized to extend within **1 inch (25 mm)** of masonry face:
 - a. Coordinate size and type with steel contractor.

2.6 CAVITY WALL FLASHING MATERIALS

- A. Flexible flashing:
 - 1. Products of manufacturers listed below meeting indicated standards and specified manufacturer's product data characteristics, except as modified below, are acceptable for use, subject to compliance with specified requirements.
 - a. Product standard of quality:
 - 1) York Manufacturing, Inc.; Multi-Flash 500
 - 2) STS Coatings, Inc.; Gorilla Flash GF-500
 - 3) Wire-Bond, Inc.; Copper Seal
 - 4) Other products that meet the criteria in section 1.04 to 1.06.

2. Characteristics:
 - a. Type: Copper core with polymer fabric laminated to copper face on both sides with non-asphalt adhesive.
 - b. Copper core: ASTM B370, CDA Alloy 110
 - c. Weight: 7 oz
 - d. Fabric: polymer fabric; laminated both faces of copper core.
 - e. Size: Manufacturer's standard width rolls.

B. ACCESSORIES:

1. Mastic/sealant: Product standard of quality is York Manufacturing, Inc.; UniverSeal US100.
 - a. Characteristics:

Type: One part 100% solids, solvent-free formulated silyl-terminated polyether (STPE), ASTM C920-11, Type S, Grade NS, Class 50.
2. Outside corner and inside corner material; manufacturer's standard available units using:
 - a. Multi-Flash 500
 - b. Preformed stainless steel: 26 gauge stainless steel.
3. End dam: Product may be folded in line with the flashing material or utilize preformed end dams by manufacturer using:
 - a. Multi-Flash 500
 - b. Preformed stainless steel: 26 gauge stainless steel
4. Splice material: Product standard of quality is York304 SS by York. Manufacturer's standard self-adhered metal material; material matching system material or use Multi-Flash 500 6" lap piece and polyether sealant as a splice.
5. Termination bar: Product standard of quality is York T-96 termination bar. Manufacturer's standard 1" composite material bar or a 1" 26 gauge stainless steel termination bar with sealant lip.

2.7 MISCELLANEOUS ANCHORS

- A. Unit Type Inserts in Concrete: Cast-iron or malleable-iron inserts of type and size indicated.
- B. Dovetail Slots: Furnish dovetail slots with filler strips, of slot size indicated, fabricated from **0.0336-inch (0.85-mm)**, galvanized steel sheet.
- C. Anchor Bolts: Steel bolts complying with **ASTM A 307, Grade A (ASTM F 568, Property Class 4.6)**; with **ASTM A 563 (ASTM A 563M)** hex nuts and, where indicated, flat washers; hot-dip galvanized to comply with ASTM A 153, Class C; of diameter and length indicated.

2.8 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Type 2, Class A, Grade 1; compressible up to 35 percent; of width and thickness indicated; formulated from the following material:
 1. Neoprene.

2.9 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.
 - 1. Do not use calcium chloride in mortar or grout.

- B. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification, for types of mortar required unless indicated otherwise.
 - 1. Limit cementitious materials in mortar to portland cement and lime.
 - 2. For masonry below grade, in contact with earth, and where indicated, use type indicated below:
 - a. Type: M.
 - 3. For Exterior, above grade, veneer applications, and where indicated, use type indicated below:
 - a. Type: N.
 - 4. For exterior, above-grade, load-bearing and nonload-bearing walls and parapet walls; for interior load-bearing walls; for interior nonload-bearing partitions, and for other applications where another type is not indicated, use type indicated below:
 - a. Type: S.

- C. Colored-Aggregate Mortar: Produce required mortar color by using colored aggregates combined with selected cementitious materials.
 - 1. Mix to match Architect's sample.

- D. Grout for Unit Masonry: Comply with ASTM C 476. Use grout of consistency indicated or, if not otherwise indicated, of consistency (fine or coarse) at time of placement that will completely fill spaces intended to receive grout.

2.10 MASONRY-CELL INSULATION

- A. Molded-Polystyrene Insulation Units: Rigid, cellular thermal insulation formed by the expansion of polystyrene-resin beads or granules in a closed mold to comply with ASTM C 578, Type I. Provide specially shaped units designed for installing in cores of masonry units.
 - 1. Products:
 - a. Concrete Block Insulating Systems; Korfil.
 - b. Shelter Enterprises Inc.; Omni Core.

- B. Core Foam Masonry Foam Insulation (Foam-in-Place Building Insulation)
 - 1. Manufacturer: cfiFOAM, Inc., or approved equal.
 - 2. Formulation: Cellular plastic insulation comprised of a spray-dried polymeric resin and a foaming catalyst concentrate which are combined with water and then injected, along with compressed air, into the wall cavity by the installer.
 - 3. ASTM E-84 Surface Burning Characteristics:
 - a. Flame Spread: 25 or Less
 - b. Smoke Generated: Less than 450
 - c. Thickness: 3.5 inches (maximum thickness allowed by test apparatus)
 - d. Tests performed by an independent, certified laboratory located within the United States of America.

- e. Flammability Classification: Class A or Class I
- 4. Thermal Conductivity of Foam Insulation:
 - a. k-value 0.20-0.25 BTU/(hr ft² °F in); 0.22, on average at 25 °F
 - b. R-Value 4.0-5.0 (hr ft² °F in)/BTU; 4.92 per inch at 25 °F
- 5. Shrinkage
 - a. 2 percent, maximum
- 6. Density of Foam:
 - a. Wet Foam 12x12x12 box weight: 2 ½ -3 ¼ lbs.
 - b. Upon final curing: 0.5-1.0 lb/ft³

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of unit masonry. Do not proceed with installation until unsatisfactory conditions have been corrected.
 - 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of unit masonry.
- B. Examine rough-in and built-in construction to verify actual locations of piping connections prior to installation.

3.2 INSTALLATION, GENERAL

- A. Thickness: Build cavity and composite walls and other masonry construction to the full thickness shown. Build single-wythe walls to the actual thickness of the masonry units, using units of thickness indicated.
- B. Build chases and recesses to accommodate items specified in this and other Sections of the Specifications.
- C. Leave openings for equipment to be installed before completion of masonry. After installing equipment, complete masonry to match construction immediately adjacent to the opening.
- D. Cut masonry units with motor-driven saws to provide clean, sharp, unchipped edges. Cut units as required to provide continuous pattern and to fit adjoining construction. Use full-size units without cutting, where possible. Allow units cut with water-cooled saws to dry before placing, unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.
- E. Mix units for exposed unit masonry from several pallets or cubes as they are placed to produce uniform blend of colors and textures.

- F. Wetting of Brick: Wet brick prior to laying if the initial rate of absorption exceeds 30 **g/30 sq. in. (g/194 sq. cm)** per minute when tested per ASTM C 67. Allow units to absorb the water so they are damp but not wet at the time of laying.
- G. Do not wet concrete masonry units.

3.3 CONSTRUCTION TOLERANCES

- A. Variation from Plumb: For vertical lines and surfaces of columns, walls, and arises, do not exceed **1/4 inch in 10 feet (6 mm in 3 m)**, nor **3/8 inch in 20 feet (10 mm in 6 m)**, nor **1/2 inch in 40 feet (12 mm in 12 m)** or more. For external corners, expansion joints, control joints, and other conspicuous lines, do not exceed **1/4 inch in 20 feet (6 mm in 6 m)**, nor **1/2 inch in 40 feet (12 mm in 12 m)** or more. For vertical alignment of head joints, do not exceed plus or minus **1/4 inch in 10 feet (6 mm in 3 m)**, nor **1/2 inch (12 mm)** maximum.
- B. Variation from Level: For bed joints and lines of exposed lintels, sills, parapets, horizontal grooves, and other conspicuous lines, do not exceed **1/4 inch in 20 feet (6 mm in 6 m)**, nor **1/2 inch in 40 feet (12 mm in 12 m)** or more. For top surface of bearing walls, do not exceed **1/8 inch (3 mm) in 10 feet (3 m)**, nor **1/16 inch (1.5 mm)** within width of a single unit.
- C. Variation of Linear Building Line: For position shown in plan and related portion of columns, walls, and partitions, do not exceed **1/2 inch in 20 feet (12 mm in 6 m)**, nor **3/4 inch in 40 feet (19 mm in 12 m)** or more.
- D. Variation in Cross-Sectional Dimensions: For columns and thickness of walls, from dimensions shown, do not exceed minus **1/4 inch (6 mm)** nor plus **1/2 inch (12 mm)**.
- E. Variation in Mortar-Joint Thickness: Do not vary from bed-joint thickness indicated by more than plus or minus **1/8 inch (3 mm)**, with a maximum thickness limited to **1/2 inch (12 mm)**. Do not vary bed-joint thickness from bed-joint thickness of adjacent course by more than **1/8 inch (3 mm)**. Do not vary from head-joint thickness indicated by more than plus or minus **1/8 inch (3 mm)**. Do not vary head-joint thickness from adjacent head-joint thickness by more than **1/8 inch (3 mm)**. Do not vary from collar-joint thickness indicated by more than minus **1/4 inch (6 mm)** or plus **3/8 inch (10 mm)**.

3.4 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint widths and for accurate locating of openings, movement-type joints, returns, and offsets. Avoid the use of less-than-half-size units at corners, jambs, and where possible at other locations.
- B. Lay walls to comply with specified construction tolerances, with courses accurately spaced and coordinated with other construction.
- C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than **4-inches (100-mm)**. Bond and interlock each course of each wythe at corners. Do not use units with less than nominal **4-inch (100-mm)** horizontal face dimensions at corners or jambs.

- D. Bond Pattern for Exposed Masonry: Lay exposed masonry in the following bond pattern; do not use units with less than nominal 4-inch (100-mm) horizontal face dimensions at corners or jambs.
 - 1. One-half running bond with vertical joint in each course centered on units in courses above and below.
- E. Stopping and Resuming Work: In each course, rack back 1/2-unit length. Clean exposed surfaces of set masonry, wet clay masonry units lightly if required, and remove loose masonry units and mortar prior to laying fresh masonry.
- F. Built-in Work: As construction progresses, build-in items specified under this and other Sections of the Specifications. Fill in solidly with masonry around built-in items.
- G. Fill space between hollow metal frames and masonry solidly with mortar, unless otherwise indicated.
- H. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath in the joint below and rod mortar or grout into core.
- I. Fill cores in hollow concrete masonry units with grout 24 inches (600 mm) under bearing plates, beams, lintels, posts, and similar items, unless otherwise indicated.
- J. Build nonload-bearing interior partitions full height of story to underside of solid floor or roof structure above unless indicated otherwise and as follows:
 - 1. Install compressible filler in joint between top of partition and underside of structure above. Use firesafing materials in rated wall construction.

3.5 MORTAR BEDDING AND JOINTING

- A. Lay hollow concrete masonry units as follows:
 - 1. With full mortar coverage on horizontal and vertical face shells.
 - 2. Bed webs in mortar in starting course on footings and in all courses of piers, columns, and pilasters, and where adjacent to cells or cavities to be filled with grout.
 - 3. For starting course on footings where cells are not grouted, spread out full mortar bed, including areas under cells.
- B. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness, unless otherwise indicated.
- C. Cut joints flush for masonry walls that are to receive plaster or other direct-applied finishes (other than paint), unless otherwise indicated.
- D. Parge exterior face of all exterior walls below grade with 1/2" thick parge coat of mortar.

3.6 HORIZONTAL-JOINT REINFORCEMENT

- A. General: Provide continuous horizontal-joint reinforcement as indicated. Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch (16 mm) on exterior side of walls, 1/2 inch (13 mm) elsewhere. Lap reinforcing a minimum of 6 inches (150 mm).

1. Space reinforcement not more than **16 inches (406 mm)** o.c.
2. Provide reinforcement in mortar joint 1 block course above and below wall openings and extending **12 inches (305 mm)** beyond opening.
 - a. Reinforcement above is in addition to continuous reinforcement.

- B. Cut or interrupt joint reinforcement at expansion joints, unless otherwise indicated.
- C. Joint reinforcement at control joints shall be continuous through the joint, unless otherwise indicated.
- D. Provide continuity at corners and wall intersections by using prefabricated "L" and "T" sections. Cut and bend reinforcement units as directed by manufacturer for continuity at returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

3.7 MASONRY-CELL INSULATION

- A. Install molded-polystyrene insulation units into masonry unit cells before laying units.

3.8 CONTROL AND EXPANSION JOINTS

- A. General: Install control and expansion joints in unit masonry or at maximum 30' o.c., unless indicated otherwise. Build-in related items as the masonry progresses. Do not form a continuous span through movement joints unless provisions are made to prevent in-plane restraint of wall or partition movement.

3.9 LINTELS

- A. Provide precast masonry lintels where shown and as required and where openings of more than **12 inches (305 mm)** for brick size units and **24 inches (610 mm)** for block size units are shown without structural steel or other supporting lintels.
 1. Provide prefabricated or built-in-place masonry lintels.
- B. Provide minimum bearing of **8 inches (200 mm)** at each jamb, unless otherwise indicated.

END OF SECTION 04 20 00

SECTION 05 50 00 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following metal fabrications:
 - 1. Rough hardware.
 - 2. Loose bearing and leveling plates.
 - 3. Loose steel lintels

1.3 SUBMITTALS

- A. Shop drawings detailing fabrication and erection of each metal fabrication indicated. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide templates for anchors and bolts specified for installation under other Sections.
 - 1. Shop drawings for steel stairs shall be prepared and signed and sealed by a professional engineer licensed in the jurisdiction of the project.

1.4 QUALITY ASSURANCE

- A. Fabricator Qualifications: Firm experienced in producing metal fabrications similar to those indicated for this Project with a record of successful in-service performance, and with sufficient production capacity to produce required units without delaying the Work.
- B. Welding Standards: Comply with applicable provisions of AWS D1.1 "Structural Welding Code--Steel," AWS D1.2 "Structural Welding Code--Aluminum," and AWS D1.3 "Structural Welding Code--Sheet Steel."
 - 1. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.

1.5 PROJECT CONDITIONS

- A. Field Measurements: Check actual locations of walls and other construction to which metal fabrications must fit by accurate field measurements before fabrication. Show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 - 1. Where field measurements cannot be made without delaying the Work, guarantee dimensions and proceed with fabricating products without field measurements. Coordinate construction to ensure that actual dimensions correspond to guaranteed dimensions. Allow for trimming and fitting.

PART 2 - PRODUCTS

2.1 FERROUS METALS

- A. Metal Surfaces, General: For metal fabrications exposed to view in the completed Work, provide materials selected for their surface flatness, smoothness, and freedom from surface blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.
- B. Steel Plates, Shapes, and Bars: **ASTM A 36 (ASTM A 36M)**.
- C. Rolled Steel Floor Plates: **ASTM A 786 (ASTM A 786M)**.
- D. Steel Tubing: Product type (manufacturing method) and as follows:
 - 1. Cold-Formed Steel Tubing: ASTM A 500.
 - 2. Hot-Formed Steel Tubing: ASTM A 501.
 - a. For exterior installations and where indicated, provide tubing with hot-dip galvanized coating per ASTM A 53.
- E. Steel Pipe: ASTM A 53, standard weight (schedule 80), unless otherwise indicated, or another weight required by structural loads.
 - 1. Galvanized finish for exterior installations and where indicated.
- F. Gray-Iron Castings: ASTM A 48, Class 30.
- G. Malleable-Iron Castings: **ASTM A 47, Grade 32510 (ASTM A 47M, Grade 22010)**.
- H. Cast-in-Place Anchors in Concrete: Anchors of type indicated below, fabricated from corrosion-resistant materials capable of sustaining, without failure, the load imposed within a safety factor of 4, as determined by testing per ASTM E 488, conducted by a qualified independent testing agency.

1. Threaded or wedge type; galvanized ferrous castings, either **ASTM A 47 (ASTM A 47M)** malleable iron or **ASTM A 27 (ASTM A 27M)** cast steel. Provide bolts, washers, and shims as required, hot-dip galvanized per ASTM A 153.

- I. Welding Rods and Bare Electrodes: Select according to AWS specifications for the metal alloy to be welded.

2.2 ALUMINUM

- A. Aluminum Extrusions: **ASTM B 221 (ASTM B 221M)**, alloy 6063-T6.
- B. Aluminum-Alloy Rolled Tread Plate: **ASTM B 632 (ASTM B 632M)** Pattern 1, alloy 6061-T6.
- C. Aluminum: Alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with not less than the strength and durability properties of the alloy and temper designated below for each aluminum form required:
 1. Extruded Bar and Tube: ASTM B 221 (ASTM B 221M), alloy 6063T5/T52.
 2. Extruded Structural Pipe and Tube: ASTM B 429, 6063-T5/T52.
 3. Drawn Seamless Tube: ASTM B 210 (ASTM B 210M), 6063-T832.
 4. Plate and Sheet: ASTM B 209 (ASTM B 209M), 6061-T6.
 5. Die and Hand Forgings: ASTM B 247 (ASTM B 247M), 6061-T6.
 6. Castings: ASTM B 26 (ASTM B 26 M), A356-T6.

2.3 PAINT

- A. Shop Primer for Ferrous Metal: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with performance requirements of FS TT-P-664, selected for good resistance to normal atmospheric corrosion, compatibility with finish paint systems indicated, and capability to provide a sound foundation for field-applied topcoats despite prolonged exposure.
- B. Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing welds in galvanized steel, with dry film containing not less than 94 percent zinc dust by weight, and complying with DOD-P-21035 or SSPC-Paint 20.
- C. Bituminous Paint: Cold-applied asphalt mastic complying with SSPC-Paint 12, except containing no asbestos fibers.

2.4 FASTENERS

- A. General: Provide plated fasteners complying with ASTM B 633, Class Fe/Zn 25 for electrodeposited zinc coating, for exterior use or where built into exterior walls. Select fasteners for the type, grade, and class required.
- B. Bolts and Nuts: Regular hexagon-head bolts, **ASTM A 307, Grade A (ASTM F 568, Property Class 4.6)**, with hex nuts, **ASTM A 563 (ASTM A 563M)**, and, where indicated, flat washers.
- C. Machine Screws: **ANSI B18.6.3 (ANSI B18.6.7M)**.
- D. Lag Bolts: **ANSI B18.2.1 (ANSI B18.2.3.8M)**.
- E. Wood Screws: Flat head, carbon steel, ANSI B18.6.1.
- F. Plain Washers: Round, carbon steel, **ANSI B18.22.1 (ANSI B18.22M)**.
- G. Lock Washers: Helical, spring type, carbon steel, ANSI B18.21.1.
- H. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.
 - 1. Material: Carbon steel components zinc-plated to comply with ASTM B 633, Class Fe/Zn 5.
 - 2. Material: Group 1 alloy 304 or 316 stainless-steel bolts and nuts complying with **ASTM F 593 (ASTM F 738M)** and **ASTM F 594 (ASTM F 836M)**.
- I. Toggle Bolts: FS FF-B-588, tumble-wing type, class and style as required.

2.5 GROUT

- A. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.6 FABRICATION, GENERAL

- A. Form metal fabrications from materials of size, thickness, and shapes indicated but not less than that needed to comply with performance requirements indicated. Work to dimensions indicated or accepted on shop drawings, using proven details of fabrication and support. Use type of materials indicated or specified for various components of each metal fabrication.
- B. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges.
- C. Allow for thermal movement resulting from the following maximum change (range) in ambient temperature in the design, fabrication, and installation of installed metal assemblies to prevent

buckling, opening up of joints, and overstressing of welds and fasteners. Base design calculations on actual surface temperatures of metals due to both solar heat gain and nighttime sky heat loss.

1. Temperature Change (Range): 100 deg F (55.5 deg C).
- D. Shear and punch metals cleanly and accurately. Remove burrs.
- E. Ease exposed edges to a radius of approximately 1/32 inch (1 mm), unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- F. Remove sharp or rough areas on exposed traffic surfaces.
- G. Weld corners and seams continuously to comply with the following:
1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 2. Obtain fusion without undercut or overlap.
 3. Remove welding flux immediately.
 4. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing, and contour of welded surface matches those adjacent.
- H. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of type indicated or, if not indicated, Phillips flat-head (countersunk) screws or bolts. Locate joints where least conspicuous.
- I. Provide for anchorage of type indicated; coordinate with supporting structure. Fabricate and space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.
- J. Shop Assembly: Preassemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- K. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.
- L. Fabricate joints that will be exposed to weather in a manner to exclude water, or provide weep holes where water may accumulate.

2.7 ROUGH HARDWARE

- A. Furnish bent, or otherwise custom-fabricated, bolts, plates, anchors, hangers, dowels, and other miscellaneous steel and iron shapes as required for framing and supporting woodwork, and for anchoring or securing woodwork to concrete or other structures. Straight bolts and other stock rough hardware items are specified in 0 6 Sections.
- B. Fabricate items to sizes, shapes, and dimensions required. Furnish malleable-iron washers for heads and nuts that bear on wood structural connections, and furnish steel washers elsewhere.

2.8 LOOSE BEARING AND LEVELING PLATES

- A. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction, made flat, free from warps or twists, and of the required thickness and bearing area. Drill plates to receive anchor bolts and for grouting as required. Galvanize after fabrication.

2.9 LOOSE STEEL LINTELS

- A. Fabricate loose structural steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated.
- B. Weld adjoining members together to form a single unit where indicated.
- C. Size loose lintels for equal bearing of **1 inch per foot (85 mm per m)** of clear span but not less than **8 inches (200 mm)** bearing at each side of openings, unless otherwise indicated.
- D. Galvanize loose steel lintels located in exterior walls.

2.10 MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Provide steel framing and supports for applications indicated that are not a part of structural steel framework as required to complete the Work.
- B. Fabricate units to sizes, shapes, and profiles indicated and required to receive other adjacent construction retained by framing and supports. Fabricate from structural steel shapes, plates, and steel bars of welded construction using mitered joints for field connection. Cut, drill, and tap units to receive hardware, hangers, and similar items.
 - 1. Equip units with integrally welded anchors for casting into concrete or building into masonry. Furnish inserts if units must be installed after concrete is placed.
 - a. Except as otherwise indicated, space anchors **24 inches (600 mm)** o.c. and provide minimum anchor units in the form of steel straps **1-1/4 inches (32 mm)** wide by **1/4 inch (6 mm)** thick by **8 inches (200 mm)** long.
- C. Galvanize miscellaneous framing and supports in the following locations:

1. Exterior locations.

2.11 FINISHES, GENERAL

- A. Comply with NAAMM "Metal Finishes Manual" for recommendations relative to applying and designing finishes.
- B. Finish metal fabrications after assembly.

2.12 FINISHES, GENERAL

- A. Comply with NAAMM "Metal Finishes Manual" for recommendations relative to applying and designing finishes.
- B. Finish metal fabrications after assembly.

2.13 STEEL AND IRON FINISHES

- A. Galvanizing: For those items indicated for galvanizing, apply zinc coating by the hot-dip process complying with the following requirements:
 1. ASTM A 153 for galvanizing iron and steel hardware.
 2. ASTM A 123 for galvanizing both fabricated and unfabricated iron and steel products made of uncoated rolled, pressed, and forged shapes, plates, bars, and strip **0.0299 inch (0.76 mm)** thick or thicker.
- B. Preparation for Shop Priming: Prepare uncoated ferrous metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed metal fabrications:
 1. Exteriors (SSPC Zone 1B): SSPC-SP 6 "Commercial Blast Cleaning."
 2. Interiors (SSPC Zone 1A): SSPC-SP 3 "Power Tool Cleaning."
- C. Apply shop primer to uncoated surfaces of metal fabrications, except those with galvanized finishes or to be embedded in concrete, sprayed-on fireproofing, or masonry, unless otherwise indicated. Comply with requirements of SSPC-PA 1 "Paint Application Specification No. 1" for shop painting.
 1. Stripe paint corners, crevices, bolts, welds, and sharp edges.

2.14 ALUMINUM FINISHES

- A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
- B. As-Fabricated Finish: AA-M10 (Mechanical Finish: as fabricated, unspecified).
- C. Class I, Clear Anodic Finish: AA-M12C22A41 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) complying with AAMA 607.1.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions, and directions for installing anchorages, including concrete inserts, sleeves, anchor bolts, and miscellaneous items having integral anchors that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to Project site.

3.2 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of ornamental formed metal.
 - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 INSTALLATION, GENERAL

- A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction. Include threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws, and other connectors as required.
- B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing miscellaneous metal fabrications. Set metal fabrication accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- C. Provide temporary bracing or anchors in formwork for items that are to be built into concrete masonry or similar construction.
- D. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop-welded because of shipping size limitations. Do not weld, cut, or abrade the surfaces of exterior units that have been hot-dip galvanized after fabrication and are intended for bolted or screwed field connections.
- E. Field Welding: Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 2. Obtain fusion without undercut or overlap.
 3. Remove welding flux immediately.
 4. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing, and contour of welded surface matches those adjacent.
- F. Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with a heavy coat of bituminous paint.

3.4 SETTING LOOSE PLATES

- A. Clean concrete and masonry bearing surfaces of bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of bearing plates.
- B. Set loose leveling and bearing plates on wedges or other adjustable devices. After the bearing members have been positioned and plumbed, tighten the anchor bolts. Do not remove wedges or shims, but if protruding, cut off flush with the edge of the bearing plate before packing with grout.
1. Use nonshrink, metallic grout in concealed locations where not exposed to moisture; use nonshrink, nonmetallic grout in exposed locations, unless otherwise indicated.
 2. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

3.5 ADJUSTING AND CLEANING

- A. A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting to comply with SSPC-PA 1 requirements for touching up shop-painted surfaces.
1. Apply by brush or spray to provide a **2.0-mil (0.05-mm)** minimum dry film thickness.
- B. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of the shop paint on miscellaneous metal is specified in Division 09 Section "Painting."
- C. For galvanized surfaces, clean welds, bolted connections, and abraded areas, and apply galvanizing repair paint to comply with ASTM A 780.

3.6 PROTECTION

- A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.

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- B. Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in field to shop; make required alterations and refinish entire unit, or provide new units.

END OF SECTION 05 50 00

SECTION 06 10 00 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 1. Wood furring, grounds, nailers, and blocking.
 2. Sheathing.

1.3 DEFINITIONS

- A. Rough Carpentry: Carpentry work not specified in other Sections and not exposed, unless otherwise specified.
- B. Exposed Framing: Dimension lumber not concealed by other construction and indicated to receive a stained or natural finish.

1.4 SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
 1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
 2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.
 3. For fire-retardant treatments specified to be High-Temperature (HT) type, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D 5664.
 4. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
 5. Include copies of warranties from chemical treatment manufacturers for each type of treatment.
- B. Fastener Patterns: Full-size templates for fasteners in exposed framing.

- C. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.
- D. Research/Evaluation Reports: For the following, showing compliance with building code in effect for Project:
 - 1. Wood-preservative-treated wood.
 - 2. Fire-retardant-treated wood.
 - 3. Engineered wood products.
 - 4. Power-driven fasteners.
 - 5. Powder-actuated fasteners.
 - 6. Expansion anchors.
 - 7. Metal framing anchors.

1.5 QUALITY ASSURANCE

- A. Single-Source Responsibility for Engineered Wood Products: Obtain each type of engineered wood product from one source and by a single manufacturer.
- B. Single-Source Responsibility for Fire-Retardant-Treated Wood: Obtain each type of fire-retardant-treated wood product from one source and by a single producer.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Keep materials under cover and dry. Protect from weather and contact with damp or wet surfaces. Stack lumber, plywood, and other panels. Provide for air circulation within and around stacks and under temporary coverings.
 - 1. For lumber and plywood pressure treated with waterborne chemicals, place spacers between each bundle to provide air circulation.

PART 2 - PRODUCTS

2.1 LUMBER, GENERAL

- A. Lumber Standards: Comply with DOC PS 20, "American Softwood Lumber Standard," and with applicable grading rules of inspection agencies certified by ALSC's Board of Review.
- B. Inspection Agencies: Inspection agencies, and the abbreviations used to reference them, include the following:
 - 1. NELMA - Northeastern Lumber Manufacturers Association.
 - 2. RIS - Redwood Inspection Service.
 - 3. SPIB - Southern Pine Inspection Bureau.
 - 4. WCLIB - West Coast Lumber Inspection Bureau.
 - 5. WWPA - Western Wood Products Association.

- C. Grade Stamps: Provide lumber with each piece factory marked with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at time of surfacing, and mill.
 - 1. For exposed lumber, furnish pieces with grade stamps applied to ends or back of each piece, or omit grade stamps and provide grade-compliance certificates issued by inspection agency.
- D. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
 - 1. Provide dressed lumber, S4S, unless otherwise indicated.
 - 2. Provide dry lumber with 19 percent maximum moisture content at time of dressing for **2-inch nominal (38-mm actual)** thickness or less, unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

- A. General: Where lumber or plywood is indicated as preservative treated or is specified to be treated, comply with applicable requirements of AWWA C2 (lumber) and AWWA C9 (plywood). Mark each treated item with the Quality Mark Requirements of an inspection agency approved by ALSC's Board of Review.
- B. Pressure treat aboveground items with waterborne preservatives (containing Preventol A8, copper azole CA-B, or equivalent) to a minimum retention of **0.25 lb/cu. ft. (4.0 kg/cu. m)**, to provide a limited lifetime warranty. After treatment, kiln-dry lumber and plywood to a maximum moisture content of 19 and 15 percent, respectively. Treatment process must meet or exceed current EPA regulations regarding the use of the treatment product. Treat indicated items and the following:
 - 1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
 - 2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
 - 3. Wood framing members less than **18 inches (460 mm)** above grade.
 - 4. Wood floor plates installed over concrete slabs directly in contact with earth.
- C. Complete fabrication of treated items before treatment, where possible. If cut after treatment, apply field treatment complying with AWWA M4 to cut surfaces. Inspect each piece of lumber or plywood after drying and discard damaged or defective pieces.
- D. The use of CCA preservatives is NOT permitted.
- E. All fasteners, flashings, brackets and hangers that come in contact with the pressure treated wood, in any fashion, shall be stainless steel (grade 304 or 316), or high grade galvanized steel G-185 min. (1.85 oz of zinc per sq.ft. of metal). Where pressure treated wood comes in contact with galvanized decking, other galvanized materials, or aluminum, provide a 30# felt isolation pad to completely separate the products.

2.3 FIRE-RETARDANT-TREATED MATERIALS

- A. General: Where fire-retardant-treated wood is indicated, comply with applicable requirements of AWWA C20 (lumber) and AWWA C27 (plywood). Identify fire-retardant-treated wood with

appropriate classification marking of UL; U.S. Testing; Timber Products Inspection, Inc.; or another testing and inspecting agency acceptable to authorities having jurisdiction.

- B. Acceptable Products:
 - 1. Pyro-Guard and Exterior Fire-X manufactured by Hoover Treated Wood Products, Inc.
 - 2. D-Blaze manufactured by Viance LLC.

2.4 MISCELLANEOUS LUMBER

- A. General: Provide lumber for support or attachment of other construction, including rooftop equipment curbs and support bases, cant strips, bucks, nailers, blocking, furring, grounds, stripping, and similar members.
- B. Fabricate miscellaneous lumber from dimension lumber of sizes indicated and into shapes shown.
- C. Moisture Content: 19 percent maximum for lumber items not specified to receive wood preservative treatment.
- D. Grade: For dimension lumber sizes, provide No. 3 or Standard grade lumber per ALSC's NGRs of any species. For board-size lumber, provide No. 3 Common grade per NELMA, NLGA, or WWPA; No. 2 grade per SPIB; or Standard grade per NLGA, WCLIB or WWPA of any species.

2.5 WOOD-BASED STRUCTURAL-USE PANELS, GENERAL

- A. Structural-Use Panel Standard: Provide plywood panels complying with DOC PS 1, "U.S. Product Standard for Construction and Industrial Plywood."
- B. Trademark: Factory mark structural-use panels with APA trademark evidencing compliance with grade requirements.

2.6 CONCEALED, PERFORMANCE-RATED STRUCTURAL-USE PANELS

- A. General: Where structural-use panels are indicated for the following concealed types of applications, provide APA-performance rated panels complying with requirements designated under each application for grade, span rating, exposure durability classification, and edge detail (where applicable).
 - 1. Thickness: Provide panels meeting requirements specified but not less than thickness indicated.
 - 2. Span Rating: Provide panels with span ratings required to meet "Code Plus" provisions of APA Form No. E30, "APA Design/Construction Guide: Residential & Commercial."
- B. Roof Sheathing: APA-rated sheathing.
 - 1. Exposure Durability Classification: Exterior.
 - 2. Span Rating: As required to suit stud spacing indicated.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Discard units of material with defects that impair quality of rough carpentry and that are too small to use with minimum number of joints or optimum joint arrangement.
- B. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted.
- C. Fit rough carpentry to other construction; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow attachment of other construction.
- D. Apply field treatment complying with AWWPA M4 to cut surfaces of preservative-treated lumber and plywood.
- E. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 - 1. NES NER-272 for power-driven fasteners.
 - 2. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.
- F. Use common wire nails, unless otherwise indicated. Use finishing nails for finish work. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; predrill as required.
- G. Use hot-dip galvanized (G-185) or stainless-steel nails where rough carpentry is exposed to weather, in ground contact, in contact with wood preservative materials, or in area of high relative humidity.
- H. Countersink nail heads on exposed carpentry work and fill holes with wood filler.

3.2 WOOD GROUNDS, NAILERS, BLOCKING, AND SLEEPERS

- A. Install wood grounds, nailers, blocking, and sleepers where shown and where required for screeding or attaching other work. Form to shapes shown and cut as required for true line and level of attached work. Coordinate locations with other work involved.
- B. Attach to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated. Build into masonry during installation of masonry work. Where possible, anchor to formwork before concrete placement.
- C. Install permanent grounds of dressed, preservative-treated, key-beveled lumber not less than **1-1/2 inches (38 mm)** wide and of thickness required to bring face of ground to exact thickness of finish material. Remove temporary grounds when no longer required.

END OF SECTION 06 10 00

SECTION 06 61 40 SOLID SURFACES (QUARTZ SURFACES FABRICATION)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 DESCRIPTION

- A. Work described in this section:

Counter sills

1.3 REFERENCES

- A. Applicable Standards: Standards of the following, as referenced herein:

American National Standards Institute (ANSI)

American Society for Testing and Materials (ASTM)

National Electrical Manufacturers Association (NEMA)

Federal Specifications (FS)

1.4 SUBMITTALS

- A. Shop drawings: Indicate dimensions, component sizes, fabrication details, attachment provisions and coordination requirements with adjacent work.
- B. Samples: Submit minimum 4" x 4" samples. Indicate full range of color and pattern variation. Approved samples will be retained as standards for work.
- C. Product data: Indicate product description, fabrication information and compliance with specified performance requirements.
- D. Maintenance data: Submit manufacturer's care and maintenance data, including repair and cleaning instructions. Include project close-out documents.

1.5 QUALITY ASSURANCE

A. Allowable tolerances:

Variation in component size: +/- 1/8" over a 10' length.

Location of openings: +/- 1/8" from indicated location.

Maximum 1/8" clearance between Quartz Surfaces and each wall.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver no components to project site until areas are ready for installation. Store components indoors prior to installation.

B. Handle materials to prevent damage to finished surfaces. Provide protective coverings to prevent physical damage or staining following installation for duration of project.

1.7 WARRANTY

A. Provide manufacturer's 10 year warranty against defects in materials. Warranty shall provide material and labor to repair or replace defective materials. Damage caused by physical or chemical abuse or damage from excessive heat will not be warranted.

PART 2 - PRODUCTS

2.1 QUARTZ SURFACES FABRICATIONS

A. Preferred products:

1. Zodiac™ Quartz Surfaces from DuPont, Dove Gray

B. Color: Dove Gray

C. Material: Homogeneous quartz surfaces materials.

D. Counter sills, 3/4" thick, standard panels of quartz surfaces material.

2.2 ACCESSORY PRODUCTS

A. Joint Adhesive: Manufacturer's standard two-part adhesive kit to create color matched, non-porous joints, with a chemical bond

B. Panel Adhesive: Manufacturer's structural RTV silicone adhesive meeting ANSI specifications and UL® listed.

- C. Sealant: Manufacturer's standard mildew-resistant, FDA/UL® recognized silicone sealant in color matching or clear formulations.

2.3 FABRICATION

- A. For warranty coverage, fabricator/installer shall be approved by Quartz Surfaces manufacturer.
- B. Fabricate components in shop to greatest extent practical to sizes and shapes indicated, in accordance with approved shop drawings and Quartz Surfaces manufacturer requirements.
- C. Form joints between components using manufacturer's standard joint adhesive. Acceptable adhesives include two-part epoxy, polyester, or acrylic adhesives. Joints shall be a maximum 1/8" wide in appearance and without voids. All field seams must be color matched with a two-part epoxy, polyester, or acrylic adhesive. Field seams should be supported along the entire length of the seam and should be at least 4 inches wide.
- D. Machine and finish component edges to a smooth, high gloss uniform finish. Rout all cutouts, then finish all edges smooth. Repair or reject defective or inaccurate work.
- E. Finish: All surfaces shall have a uniform gloss finish.

{Polished, with a gloss rating greater than or equal to 50 on the 60° Gloss Scale}

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install components plumb and level, in accordance with approved shop drawings and product installation details. Tops must be flat and true to within 1/8" (3mm) of a flat surface over a 10' length. Allow a maximum 1/8" clearance between quartz surface and each wall.
- B. Form field joints using manufacturer's recommended adhesive, with joint widths no greater than 1/8" in finished work. Keep components and hands clean when making joints.
- C. Keep components and hands clean during installation. Remove adhesives, sealants and other stains. Components shall be clean on Date of Substantial Completion.
- D. Protect surfaces from damage until Date of Substantial Completion.
- E. Fabricator/Installer is to provide commercial care and maintenance literature, review maintenance procedures and warranty details with the director of maintenance upon completion of project.

END OF SECTION 06 61 40

SECTION 07 11 13 - BITUMINOUS DAMPPROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes hot-applied asphalt dampproofing applied to the following surfaces:
 - 1. Exterior, below-grade surfaces of concrete foundation walls.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include recommendations for method of application, primer, number of coats, coverage or thickness, and protection course.
- B. Material Certificates: For each product, signed by manufacturers.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain primary dampproofing materials and primers through one source from a single manufacturer. Provide secondary materials recommended by manufacturer of primary materials.

1.5 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit asphalt dampproofing to be performed according to manufacturers' written instructions.
- B. Ventilation: Provide adequate ventilation during application of dampproofing in enclosed spaces. Maintain ventilation until dampproofing has thoroughly cured.

PART 2 - PRODUCTS

2.1 HOT-APPLIED ASPHALT DAMPPROOFING

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Meadows, W. R., Inc., or approved equal.
 - 2. Owens Corning; Trumbull Division, or approved equal.
- B. Hot-Applied Asphalt Dampproofing: ASTM D 449, Type I.

2.2 COLD-APPLIED, CUT-BACK ASPHALT DAMPPROOFING

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. ChemMasters Corp.
 - 2. Degussa Building Systems; Sonneborn Brand Products.
 - 3. Henry Company.
 - 4. Karnak Corporation.
 - 5. Koppers Inc.
 - 6. Meadows, W. R., Inc.
- B. Trowel Coats: ASTM D 4586, Type I, Class 1, fibered.
- C. Brush and Spray Coats: ASTM D 4479, Type I, fibered.

2.3 PROTECTION COURSE

- A. Protection Course: Unfaced, fan-folded, extruded-polystyrene board insulation, nominal thickness **1/4 inch (6 mm)** with compressive strength of not less than **8 psi (55 kPa)** per ASTM D 1621.

2.4 MISCELLANEOUS MATERIALS

- A. Cut-Back Asphalt Primer: ASTM D 41.
- B. Emulsified-Asphalt Primer: ASTM D 1227, Type III, Class 1, except diluted with water as recommended by manufacturer.
- C. Asphalt-Coated Glass Fabric: ASTM D 1668, Type I.
- D. Patching Compound: [**Manufacturer's fibered mastic**] of type recommended by dampproofing manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for surface smoothness and other conditions affecting performance of work.
 - 1. Proceed with dampproofing application only after substrate construction and penetrating work have been completed and unsatisfactory conditions have been corrected.
 - 2. Test for surface moisture according to ASTM D 4263.

3.2 PREPARATION

- A. Protection of Other Work: Mask or otherwise protect adjoining exposed surfaces from being stained, spotted, or coated with dampproofing. Prevent dampproofing materials from entering and clogging weep holes and drains.
- B. Clean substrates of projections and substances detrimental to work; fill voids, seal joints, and apply bond breakers if any, as recommended by prime material manufacturer.
- C. Apply patching compound for filling and patching tie holes, honeycombs, reveals, and other imperfections[; **cover with asphalt-coated glass fabric**].

3.3 APPLICATION, GENERAL

- A. Comply with manufacturer's written recommendations unless more stringent requirements are indicated or required by Project conditions to ensure satisfactory performance of dampproofing.
 - 1. Apply additional coats if recommended by manufacturer or required to achieve coverages indicated.
 - 2. Allow each coat of dampproofing to cure 24 hours before applying subsequent coats.
 - 3. Allow 48 hours drying time prior to backfilling.
- B. Apply dampproofing to footings and foundation walls where opposite side of wall faces building interior whether indicated or not.
 - 1. Apply from finished-grade line to top of footing, extend over top of footing, and down a minimum of **6 inches (150 mm)** over outside face of footing.
 - 2. Extend **12 inches (300 mm)** onto intersecting walls and footings, but do not extend onto surfaces exposed to view when Project is completed.
 - 3. Install flashings and corner protection stripping at internal and external corners, changes in plane, construction joints, cracks, and where shown as "reinforced," by embedding an **8-inch- (200-mm-)** wide strip of asphalt-coated glass fabric in a heavy coat of dampproofing. Dampproofing coat required for embedding fabric is in addition to other coats required.

3.4 HOT-APPLIED ASPHALT DAMPPROOFING

- A. Do not apply hot asphalt when substrate condition causes foaming.
- B. Kettle Temperature: Comply with dampproofing material manufacturer's written recommendations, and keep at least **25 deg F (14 deg C)** below the flash point.
- C. Prime masonry and other porous substrates.
- D. Apply a uniform coat of hot asphalt by mopping or spraying at not less than **20 lb or 2.5 gal./100 sq. ft. (98 kg or 1 L/sq. m)**.
- E. Apply a second coat [**to below-grade foundation walls**] as specified above. Apply double thickness of second coat where first application has failed to produce a smooth, shiny, impervious coat.

3.5 COLD-APPLIED, CUT-BACK ASPHALT DAMPPROOFING

- A. On Unparged Masonry Foundation Walls: Apply primer and 1 trowel coat at not less than **4 gal./100 sq. ft. (1.6 L/sq. m)**.

3.6 INSTALLATION OF PROTECTION COURSE

- A. Where indicated, install protection course over completed-and-cured dampproofing. Comply with dampproofing material manufacturer's written recommendations for attaching protection course.
 - 1. Support protection course with spot application of adhesive of type recommended by protection board manufacturer over cured coating.
 - 2. Install protection course on same day of installation of dampproofing (while coating is tacky) to ensure adhesion.

3.7 CLEANING

- A. Remove dampproofing materials from surfaces not intended to receive dampproofing.

END OF SECTION 07 11 13

SECTION 07 21 00 - BUILDING INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Insulation under slabs-on-grade.
 - 2. Foundation wall insulation (supporting backfill).
 - 3. Concealed building insulation - batt.

1.3 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 01 Specification Sections.
- B. Product Data for each type of insulation product specified.

1.4 QUALITY ASSURANCE

- A. Single-Source Responsibility for Insulation Products: Obtain each type of building insulation from a single source with resources to provide products complying with requirements indicated without delaying the Work.
- B. Fire-Test-Response Characteristics: Provide insulation and related materials with the fire-test-response characteristics indicated on Drawings or specified elsewhere in this Section as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.
 - 1. Surface-Burning Characteristics: ASTM E 84.
 - 2. Fire-Resistance Ratings: ASTM E 119.
 - 3. Combustion Characteristics: ASTM E 136.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect insulation materials from physical damage and from deterioration by moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.

- B. Protect plastic insulation as follows:
1. Do not expose to sunlight, except to extent necessary for period of installation and concealment.
 2. Protect against ignition at all times. Do not deliver plastic insulating materials to Project site before installation time.
 3. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering insulation products that may be incorporated in the work include, but are not limited to, the following:
1. Extruded-Polystyrene Board Insulation:
 - a. DiversiFoam Products, or approved equal.
 - b. Dow Chemical Co., or approved equal.
 - c. Owens-Corning Co., or approved equal.
 2. Glass-Fiber Insulation:
 - a. CertainTeed Corporation, or approved equal.
 - b. Knauf Fiber Glass GmbH, or approved equal.
 - c. Owens-Corning Fiberglas Corporation, or approved equal.
 - d. Schuller International, Inc., or approved equal.

2.2 INSULATING MATERIALS

- A. General: Provide insulating materials that comply with requirements and with referenced standards.
1. Preformed Units: Sizes to fit applications indicated; selected from manufacturer's standard thicknesses, widths, and lengths.
- B. Extruded-Polystyrene Board Insulation: Rigid, cellular polystyrene thermal insulation formed from polystyrene base resin by an extrusion process using hydrochlorofluorocarbons as blowing agent to comply with ASTM C 578 for type and with other requirements indicated below:
1. Type IV, **1.60-lb/cu. ft. (26-kg/cu. m)** minimum density, unless otherwise indicated for below grade applications.
 2. Type X, **1.30-lb/cu. ft. (21-kg/cu. m)** minimum density for cavity wall construction.
 3. Surface-Burning Characteristics: Maximum flame-spread and smoke-developed indices of 75 and 450, respectively.
- C. Faced Mineral-Fiber Blanket Insulation: **For use where insulation is exposed:** ASTM C 665, Type III (blankets with reflective membrane facing), Class A (membrane-faced surface with a flame spread of 25 or less); and smoke development of 150, Category 1 (membrane is a vapor barrier), faced with foil-scrim-polyethylene vapor-retarder membrane on one face; consisting of fibers manufactured from glass.

1. Flanged Units: Provide blankets fabricated with facing incorporating **5-inch- (127-mm-)** wide flanges along edges for attachment to framing members.
2. Provide Flame Spread 25 as manufactured by Owens Corning or approved equal.

D. Faced Mineral-Fiber Blanket Insulation: **For use where insulation is covered with gypsum board:** Thermal insulation combining mineral fibers of type described below with thermosetting resins to comply with ASTM C 665, Type III, Class B (Category 1) **foil** facing and flame spread of 25 or less)and smoke development of 50 or less;

1. Mineral-Fiber Type: Fibers manufactured from glass.
2. Flanged Units: Provide blankets fabricated with facing incorporating **5-inch- (127-mm-)** wide flanges along edges for attachment to framing members.
3. Provide products with a minimum R-Value of 13.0 for 3-1/2 thick blankets.

2.3 AUXILIARY INSULATING MATERIALS

A. Adhesive for Bonding Insulation: Product with demonstrated capability to bond insulation securely to substrates indicated without damaging insulation and substrates.

2.4 MASONRY-CELL INSULATION

A. Molded-Polystyrene Insulation Units: Rigid, cellular thermal insulation formed by the expansion of polystyrene-resin beads or granules in a closed mold to comply with ASTM C 578, Type I. Provide specially shaped units designed for installing in cores of masonry units.

1. Products:
 - a. Concrete Block Insulating Systems; Korfil, or approved equal.
 - b. Shelter Enterprises Inc.; Omni Core, or approved equal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements of Sections in which substrates and related work are specified and to determine if other conditions affecting performance of insulation are satisfactory. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrates of substances harmful to insulations or vapor retarders, including removing projections capable of puncturing vapor retarders or that interfere with insulation attachment.

- B. Close off openings in cavities receiving poured-in-place insulation to prevent escape of insulation. Provide bronze or stainless-steel screens (inside) where openings must be maintained for drainage or ventilation.

3.3 INSTALLATION, GENERAL

- A. Comply with insulation manufacturer's written instructions applicable to products and application indicated.
- B. Install insulation that is undamaged, dry, unsoiled, and has not been exposed at any time to ice and snow.
- C. Extend insulation in thickness indicated to envelop entire area to be insulated. Cut and fit tightly around
- D. and obstructions and fill voids with insulation. Remove projections that interfere with placement.
- E. Apply single layer of insulation to produce thickness indicated.

3.4 INSTALLATION OF PERIMETER AND UNDER-SLAB INSULATION

- A. On vertical surfaces, set units in adhesive applied according to manufacturer's written instructions. Use adhesive recommended by insulation manufacturer.
- B. Protect below-grade insulation on vertical surfaces from damage during backfilling.
- C. Protect top surface of horizontal insulation from damage during concrete work by applying protection board.

3.5 INSTALLATION MASONRY CELL INSULATION

- A. On units of plastic insulation, install small pads of adhesive spaced approximately **12 inches** o.c. both ways on inside face, as recommended by manufacturer. Fit courses of insulation between wall ties and other confining obstructions in cavity, with edges butted tightly both ways. Press units firmly against inside wythe of masonry or other construction as shown.

3.6 INSTALLATION OF GENERAL BUILDING INSULATION

- A. Apply insulation units to substrates complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.
- B. Seal joints between closed-cell (nonbreathing) insulation units by applying adhesive, mastic, or sealant to edges of each unit to form a tight seal as units are shoved into place. Fill voids in completed installation with adhesive, mastic, or sealant as recommended by insulation manufacturer.

- C. Set vapor-retarder-faced units with vapor retarder to warm side of construction, unless otherwise indicated. Do not obstruct ventilation spaces, except for firestopping.
 - 1. Tape joints and ruptures in vapor retarder, and seal each continuous area of insulation to surrounding construction to ensure airtight installation.

- D. Set reflective, foil-faced units with not less than **0.75-inch (19-mm)** air space in front of foil as indicated.

- E. Install mineral-fiber insulation in cavities formed by framing members according to the following requirements:
 - 1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill cavity, provide lengths that will produce a snug fit between ends.
 - 2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
 - 3. For metal-framed wall cavities where cavity heights exceed **96 inches (2438 mm)**, support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.

3.7 PROTECTION

- A. General: Protect installed insulation and vapor retarders from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 07 21 00

**SECTION 07 24 19 - WATER-DRAINAGE EXTERIOR INSULATION AND FINISH SYSTEM
(EIFS)**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes water-drainage exterior insulation and finish system (EIFS) applied over water-resistant coating over sheathing.
- B. Section includes requirements for cleaning, repairing and recoating of existing E.I.F.S. system.
- C. Related Sections:
 - 1. Division 06 Section "Rough Carpentry" for sheathing.
 - 2. Division 07 Section "Joint Sealants" for sealing joints in EIFS with elastomeric joint sealants.

1.3 SYSTEM DESCRIPTION

- A. Class PB EIFS: A non-load-bearing, exterior wall cladding system that consists of an insulation board attached adhesively, mechanically, or both to the substrate; an integrally reinforced base coat; and a textured protective finish coat.
- B. Water-Drainage EIFS: EIFS with a means that allows water entering into an EIFS assembly to drain to the exterior.

1.4 PERFORMANCE REQUIREMENTS

- A. EIFS Performance: Comply with the following:
 - 1. Bond Integrity: Free from bond failure within EIFS components or between system and supporting wall construction, resulting from exposure to fire, wind loads, weather, or other in-service conditions.
 - 2. Weathertightness: Resistant to water penetration from exterior into water-drainage EIFS and assemblies behind it or through them into interior of building that results in deterioration of thermal-insulating effectiveness or other degradation of EIFS and assemblies behind it, including substrates, supporting wall construction, and interior finish, and including a means that allows water entering into an EIFS assembly to drain to the exterior.

- B. Class PB EIFS: Provide EIFS having physical properties and structural performance that comply with the following:
1. Abrasion Resistance: Sample consisting of **1-inch- (25.4-mm-)** thick EIFS mounted on **1/2-inch- (12.7-mm-)** thick gypsum board; cured for a minimum of 28 days; and showing no cracking, checking, or loss of film integrity after exposure to **528 quarts (500 L)** of sand when tested per ASTM D 968, Method A.
 2. Absorption-Freeze Resistance: No visible deleterious effects and negligible weight loss after 60 cycles per EIMA 101.01.
 3. Accelerated Weathering: Five samples per ICC-ES AC235 showing no cracking, checking, crazing, erosion, rusting, blistering, peeling, delamination, or other characteristics that might affect performance as a wall cladding after testing for 2000 hours when viewed under 5 times magnification per ASTM G 153 or ASTM G 154.
 4. Freeze-Thaw: No surface changes, cracking, checking, crazing, erosion, rusting, blistering, peeling, or delamination, or indications of delamination between components when viewed under 5 times magnification after 60 cycles per EIMA 101.01.
 5. Mildew Resistance of Finish Coat: Sample applied to **2-by-2-inch (50.8-by-50.8-mm)** clean glass substrate, cured for 28 days, and showing no growth when tested per ASTM D 3273 and evaluated according to ASTM D 3274.
 6. Salt-Spray Resistance: No deleterious affects when tested according to ICC-ES AC235.
 7. Tensile Adhesion: No failure in the EIFS, adhesive, base coat, or finish coat when tested per EIMA 101.03.
 8. Water Penetration: Sample consisting of **1-inch- (25.4-mm-)** thick EIFS mounted on **1/2-inch- (12.7-mm-)** thick gypsum board, cured for 28 days, and showing no water penetration into the plane of the base coat to expanded polystyrene board interface of the test specimen after 15 minutes at **6.24 lbf/sq. ft. (299 Pa)** of air pressure difference or 20 percent of positive design wind pressure, whichever is greater, across the specimen during a test period when tested per EIMA 101.02.
 9. Water Resistance: Three samples, each consisting of **1-inch- (25.4-mm-)** thick EIFS mounted on **1/2-inch- (12.7-mm-)** thick gypsum board; cured for 28 days; and showing no cracking, checking, crazing, erosion, rusting, blistering, peeling, or delamination after testing for 14 days per ASTM D 2247.
 10. Impact Resistance: Sample consisting of **1-inch- (25.4-mm-)** thick EIFS when constructed, conditioned, and tested per EIMA 101.86; and meeting or exceeding the following:
 - a. Standard Impact Resistance: **25 to 49 inch-lb (2.8 to 5.6 J)**.
 - b. Medium Impact Resistance: **50 to 89 inch-lb (5.7 to 10.1 J)**.
 - c. High Impact Resistance: **90 to 150 inch-lb (10.2 to 17 J)**.
 - d. Ultra-High Impact Resistance: More than **150 inch-lb (17 J)**.
 11. Drainage: According to ICC-ES AC24.
 12. Structural Performance Testing: EIFS assembly and components shall comply with ICC-ES AC235 when tested per ASTM E 330.

1.5 SUBMITTALS

- A. Product Data: For each type and component of EIFS indicated.

- B. Shop Drawings: For EIFS. Include plans, elevations, sections, details of components, details of penetration and termination, flashing details, joint locations and configurations, fastening and anchorage details including mechanical fasteners, and connections and attachments to other work.
 - C. Samples for Initial Selection: For each type of finish-coat color and texture indicated.
 - 1. Include similar Samples of joint sealants and exposed accessories involving color selection.
 - D. Samples for Verification: 24-inch- (600-mm-) square panels for each type of finish-coat color and texture indicated, prepared using same tools and techniques intended for actual work including a typical control joint filled with sealant of color selected.
 - 1. Include Sealants Samples to verify color selected.
 - E. Qualification Data: For Installer and testing agency.
 - F. Manufacturer Certificates: Signed by manufacturers certifying that EIFS and joint sealants comply with requirements.
 - G. Material or Product Certificates: For cementitious materials and aggregates and for each insulation and joint sealant, from manufacturer.
 - H. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each water-/weather-resistive barrier, insulation, reinforcing mesh, joint sealant, and coating.
 - I. Compatibility and Adhesion Test Reports: For joint sealants from sealant manufacturer indicating the following:
 - 1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
 - 2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.
 - J. Field quality-control reports and special inspection reports.
 - K. Evaluation Reports: For fasteners water-resistive coating adhesive membrane flashing and EIFS (including insulation), from authority having jurisdiction.
 - L. Maintenance Data: For EIFS to include in maintenance manuals.
- 1.6 QUALITY ASSURANCE
- A. Installer Qualifications: An installer who is certified in writing by EIFS manufacturer as qualified to install manufacturer's system using trained workers.
 - B. Source Limitations: Obtain EIFS from single source from single EIFS manufacturer and from sources approved by EIFS manufacturer as compatible with system components.

- C. Fire-Test-Response Characteristics: Provide EIFS and system components with the following fire-test-response characteristics as determined by testing identical EIFS and system components per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify products with appropriate markings of applicable testing agency.
1. Fire-Resistance Characteristics: Provide materials and construction tested for fire resistance per ASTM E 119.
 2. Full-Scale Multistory Fire Test: Tested mockup, representative of completed multistory wall assembly of which EIFS is a part, complies with UBC Standard 26-4 for test method and required fire-test-response characteristics of exterior non-load-bearing wall panel assemblies containing foam-plastic insulation.
 3. Full-Scale Diversified Fire Test: Tested mockup, representative of completed multistory wall assembly of which EIFS is a part, showing no significant contribution to vertical or horizontal flame spread per ASTM E 108 modified for testing vertical walls.
 4. Intermediate-Scale Multistory Fire Test: Tested mockup, representative of completed multistory wall assembly of which EIFS is a part, complies with NFPA 285 for test method and required fire-test-response characteristics of exterior non-load-bearing wall panel assemblies containing foam-plastic insulation.
 5. Radiant Heat Exposure: No ignition of EIFS when tested according to NFPA 268.
 6. Potential Heat: Acceptable level when tested according to NFPA 259.
 7. Surface-Burning Characteristics: Provide insulation board, adhesives, base coats, and finish coats with flame-spread index of 25 or less and smoke-developed index of 450 or less, per ASTM E 84.
- D. Preinstallation Conference: Conduct conference at Project site.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original, unopened packages with manufacturers' labels intact and clearly identifying products.
- B. Store materials inside and under cover; keep them dry and protected from weather, direct sunlight, surface contamination, aging, corrosion, damaging temperatures, construction traffic, and other causes.
1. Stack insulation board flat and off the ground.
 2. Protect plastic insulation against ignition at all times. Do not deliver plastic insulating materials to Project site before installation time.
 3. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

1.8 PROJECT CONDITIONS

- A. Weather Limitations: Maintain ambient temperatures above 40 deg F (4.4 deg C) for a minimum of 24 hours before, during, and after adhesives or coatings are applied. Do not apply EIFS adhesives or coatings during rainfall. Proceed with installation only when existing and forecasted weather

conditions and ambient outdoor air, humidity, and substrate temperatures permit EIFS to be applied, dried, and cured according to manufacturers' written instructions and warranty requirements.

1.9 COORDINATION

- A. Coordinate installation of EIFS with related Work specified in other Sections to ensure that wall assemblies, including sheathing, weather-resistant sheathing paper, flashing, trim, joint sealants, windows, and doors, are protected against damage from the effects of weather, age, corrosion, moisture, and other causes. Do not allow water to penetrate behind flashing and drainage plane that is behind water-drainage EIFS.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Dryvit Systems, Inc., Outsulation Plus MD, Basis of Design.
 - 2. El Rey Stucco Company, Inc.; a brand of ParexLahabra, Inc.
 - 3. Parex, Inc.; a brand of ParexLahabra, Inc.
 - 4. Sto Corp.

2.2 MATERIALS

- A. Compatibility: Provide water-resistive coating, adhesive, fasteners, board insulation, reinforcing meshes, base- and finish-coat systems, sealants, and accessories that are compatible with one another and with substrates and approved for use by EIFS manufacturer for Project.
- B. Water-Resistive Coatings: EIFS manufacturer's standard formulation and accessories for use as water/weather-resistive barriers, compatible with substrate, and complying with physical and performance criteria of ICC-ES AC209.
 - 1. Sheathing Joint Compound and Tape: Type recommended by EIFS manufacturer for sealing joints between and penetrations through sheathing.
- C. Primer/Sealer: EIFS manufacturer's standard substrate conditioner designed to seal substrates from moisture penetration and to improve the bond between substrate of type indicated and adhesive used for application of insulation.
- D. Flexible-Membrane Flashing: Cold-applied, fully self-adhering, self-healing, rubberized-asphalt and polyethylene-film composite sheet or tape and primer; EIFS manufacturer's standard or product recommended in writing by EIFS manufacturer.

- E. Drainage Mat: Three-dimensional, nonwoven, entangled filament, nylon or plastic mat designed to drain incidental moisture by gravity; EIFS manufacturer's standard or product recommended in writing by EIFS manufacturer with manufacturer's standard corrosion-resistant mechanical fasteners suitable for intended substrate.
- F. Spacers: Woven or fused, self-furring, PVC mesh lath furring strips; EIFS manufacturer's standard or product recommended in writing by EIFS manufacturer with manufacturer's standard corrosion-resistant mechanical fasteners suitable for intended substrate.
- G. Insulation Adhesive: EIFS manufacturer's standard formulation designed for indicated use, compatible with substrate, and complying with[**one of**] the following:
1. Job-mixed formulation of portland cement complying with ASTM C 150, Type I, and polymer-based adhesive specified for base coat.
 2. Factory-blended dry formulation of portland cement, dry polymer admixture, and fillers specified for base coat.
 3. Factory-mixed noncementitious formulation designed for adhesive attachment of insulation to substrates of type indicated, as recommended by EIFS manufacturer.
- H. Molded, Rigid Cellular Polystyrene Board Insulation: Comply with ASTM C 578, Type I; EIFS manufacturer's requirements; and EIMA's "EIMA Guideline Specification for Expanded Polystyrene (EPS) Insulation Board" for most stringent requirements for material performance and qualities of insulation, including dimensions and permissible variations, and the following:
1. Aging: Before cutting and shipping, age insulation in block form by air drying for not less than six weeks or by another method approved by EIMA that produces equivalent results.
 2. Flame-Spread and Smoke-Developed Indexes: 25 and 450 or less, respectively, per ASTM E 84.
 3. Dimensions: Provide insulation boards not more than **24 by 48 inches (610 by 1219 mm)** and in thickness indicated but not more than **4 inches (102 mm)** thick or less than thickness allowed by ASTM C 1397.
 4. Channeled Board Insulation: EIFS manufacturer's standard factory-fabricated profile with linear, vertical drainage channels, slots, or waves on the back side of board.
 5. Board Insulation Closure Blocks: EIFS manufacturer's standard density, size, and configuration.
 6. Foam Shapes: Provide with profiles and dimensions indicated on Drawings.
- I. Reinforcing Mesh: Balanced, alkali-resistant, open-weave, glass-fiber mesh treated for compatibility with other EIFS materials, made from continuous multiend strands with retained mesh tensile strength of not less than **120 lbf/in. (21 dN/cm)** per ASTM E 2098; complying with ASTM D 578 and the following:
1. Heavy-Duty Reinforcing Mesh: Not less than **20 oz./sq. yd. (678 g/sq. m).**
 2. Strip Reinforcing Mesh: Not less than **3.75 oz./sq. yd. (127 g/sq. m).**
 3. Detail Reinforcing Mesh: Not less than **4.0 oz./sq. yd. (136 g/sq. m).**
 4. Corner Reinforcing Mesh: Not less than **7.2 oz./sq. yd. (244 g/sq. m).**
- J. Base-Coat Materials: EIFS manufacturer's standard mixture complying with one of the following requirements:

1. Factory-blended dry formulation of portland cement, dry polymer admixture, and inert fillers to which only water is added at Project site.
- K. Waterproof Adhesive/Base-Coat Materials: EIFS manufacturer's standard waterproof formulation complying with [**one of**] the following:
1. Job-mixed formulation of portland cement complying with ASTM C 150, Type I, white or natural color; and manufacturer's standard polymer-emulsion adhesive designed for use with portland cement.
 2. Job-combined formulation of manufacturer's standard polymer-emulsion adhesive and manufacturer's standard dry mix containing portland cement.
- L. Primer: EIFS manufacturer's standard factory-mixed, elastomeric-polymer primer for preparing base-coat surface for application of finish coat.
- M. Finish-Coat Materials: EIFS manufacturer's standard acrylic-based coating with enhanced mildew resistance complying with the following:
1. Factory-mixed formulation of polymer-emulsion binder, colorfast mineral pigments, and fillers used with stone particles for embedding in finish coat to produce an applied-aggregate finish.
 - a. Aggregate: Marble chips of size and color as selected by Architect from manufacturer's full range.
 2. Sealer: Manufacturer's waterproof, clear acrylic-based sealer for protecting finish coat.
 3. Colors: As selected by Architect from manufacturer's full range.
- N. Water: Potable.
- O. Mechanical Fasteners: EIFS manufacturer's standard corrosion-resistant fasteners consisting of thermal cap, standard washer and shaft attachments, and fastener indicated below; selected for properties of pullout, tensile, and shear strength required to resist design loads of application indicated; capable of pulling fastener head below surface of insulation board; and of the following description:
1. For attachment to steel studs from **0.033 to 0.112 inch (0.84 to 2.84 mm)** in thickness, provide steel drill screws complying with ASTM C 954.
 2. For attachment to light-gage steel framing members not less than **0.0179 inch (0.45 mm)** in thickness, provide steel drill screws complying with ASTM C 1002.
 3. For attachment to wood framing members and plywood sheathing, provide steel drill screws complying with ASTM C 1002, Type W.
 4. For attachment to masonry and concrete substrates, provide sheathing dowel in form of a plastic wing-tipped fastener with thermal cap, sized to fit insulation thickness indicated and to penetrate substrate to depth required to secure anchorage.
 5. For attachment, provide manufacturer's standard fasteners suitable for substrate.
- P. Trim Accessories: Type as designated or required to suit conditions indicated and to comply with EIFS manufacturer's written instructions; manufactured from UV-stabilized PVC; and complying with ASTM D 1784, manufacturer's standard Cell Class for use intended, and ASTM C 1063.

1. Casing Bead: Prefabricated, one-piece type for attachment behind insulation, of depth required to suit thickness of coating and insulation, with face leg perforated for bonding to coating and back leg.
2. Drip Screed/Track: Prefabricated, one-piece type for attachment behind insulation with face leg extended to form a drip, of depth required to suit thickness of coating and insulation, with face leg perforated for bonding to coating and back leg.
3. Weep Screed/Track: Prefabricated, one-piece type for attachment behind insulation with perforated face leg extended to form a drip and weep holes in track bottom, of depth required to suit thickness of coating and insulation, with face leg perforated for bonding to coating and back leg; designed to drain incidental moisture that gets into wall construction to the exterior at terminations of EIFS with drainage.
4. Expansion Joint: Prefabricated, one-piece V profile; designed to relieve stress of movement.
5. Window Sill Flashing: Prefabricated type for both flashing and sloping sill over framing beneath windows; with end and back dams; designed to direct water to exterior.
6. Parapet Cap Flashing: Type for both flashing and covering parapet top with design complying with ASTM C 1397.

2.3 ELASTOMERIC SEALANTS

- A. Elastomeric Sealant Products: Provide EIFS manufacturer's listed and recommended chemically curing, elastomeric sealant that is compatible with joint fillers, joint substrates, and other related materials, and complies with requirements for products and testing indicated in ASTM C 1481 and with requirements in Division 7 Section "Joint Sealants" for products corresponding to description indicated below:
 1. Sealant with a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- B. Preformed Foam Sealant Products: Provide sealant compatible with adjacent materials and complying with requirements in Division 7 Section "Joint Sealants."
- C. Sealant Color: As selected by Architect from manufacturer's full range.

2.4 MIXING

- A. General: Comply with EIFS manufacturer's requirements for combining and mixing materials. Do not introduce admixtures, water, or other materials except as recommended by EIFS manufacturer. Mix materials in clean containers. Use materials within time period specified by EIFS manufacturer or discard.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of EIFS.

- B. Examine roof edges, wall framing, flashings, openings, substrates, and junctures at other construction for suitable conditions where EIFS will be installed.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.
 - 1. Begin coating application only after surfaces are dry.
 - 2. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Protect contiguous work from moisture deterioration and soiling caused by application of EIFS. Provide temporary covering and other protection needed to prevent spattering of exterior finish coats on other work.
- B. Protect EIFS, substrates, and wall construction behind them from inclement weather during installation. Prevent penetration of moisture behind drainage plane of EIFS and deterioration of substrates.
- C. Prepare and clean substrates to comply with EIFS manufacturer's written instructions to obtain optimum bond between substrate and adhesive for insulation.

3.3 EIFS INSTALLATION, GENERAL

- A. Comply with EIFS manufacturer's written instructions for installation of EIFS as applicable to each type of substrate indicated.

3.4 SUBSTRATE PROTECTION APPLICATION

- A. Primer/Sealer: Apply over gypsum sheathing substrates to protect substrates from degradation and where required by EIFS manufacturer for improving adhesion of insulation to substrate.
- B. Water-Resistive Coatings: Apply over substrates to protect substrates from degradation and to provide water-/weather-resistive barrier.
 - 1. Tape and seal joints, exposed edges, terminations, and inside and outside corners of sheathing unless otherwise indicated by EIFS manufacturer's written instructions.
- C. Waterproof Adhesive/Base Coat: Apply over sloped surfaces where indicated on Drawings to protect substrates from degradation.
- D. Flexible-Membrane Flashing: Install over weather-resistive barrier, applied and lapped to shed water; seal at openings, penetrations, terminations, and where indicated by EIFS manufacturer's written instructions to protect wall assembly from degradation. Prime substrates, if required, and install flashing to comply with EIFS manufacturer's written instructions and details.

3.5 TRIM INSTALLATION

- A. Trim: Apply trim accessories at perimeter of EIFS, at expansion joints, at window sills, and elsewhere as indicated, according to EIFS manufacturer's written instructions. Coordinate with installation of insulation.
1. Weep Screed/Track: Use at bottom termination edges, at window and door heads of water-drainage EIFS unless otherwise indicated.
 2. Window Sill Flashing: Use at windows unless otherwise indicated.
 3. Expansion Joint: Use where indicated on Drawings.
 4. Casing Bead: Use at other locations.
 5. Parapet Cap Flashing: Use where indicated on Drawings.

3.6 DRAINAGE MAT INSTALLATION

- A. Drainage Mat: Apply wrinkle free, continuously, with edges butted and mechanically secured with fasteners over water-/weather-resistive barrier according to manufacturer's written instructions.

3.7 INSULATION INSTALLATION

- A. Board Insulation: Adhesively and mechanically attach insulation to substrate in compliance with ASTM C 1397, EIFS manufacturer's written instructions, and the following:
1. Apply adhesive to insulation by notched-trowel method in a manner that results in coating the entire surface of sheathing with adhesive once insulation is adhered to sheathing unless EIFS manufacturer's written instructions specify using primer/sealer with ribbon-and-dab method. Apply adhesive to a thickness of not less than **1/4 inch (6.4 mm)** for factory mixed and not less than **3/8 inch (9.6 mm)** for field mixed, measured from surface of insulation before placement.
 2. Apply adhesive to insulation by notched-trowel method in a manner that results in coating the entire surface of drainage mat with adhesive once insulation is adhered to drainage mat.
 3. Apply adhesive to ridges on back of insulation by notched-trowel method in a manner that results in full adhesive contact over the entire surface of ridges, leaving channels free of adhesive once insulation is adhered to substrate.
 4. Press and slide insulation into place. Apply pressure over the entire surface of insulation to accomplish uniform contact, high initial grab, and overall level surface.
 5. Allow adhered insulation to remain undisturbed for period recommended by EIFS manufacturer, but not less than 24 hours, before installing mechanical fasteners, beginning rasping and sanding insulation, or applying base coat and reinforcing mesh.
 6. Mechanically attach insulation to substrate by method complying with EIFS manufacturer's written instructions. Install top surface of fastener heads flush with plane of insulation. Install fasteners into or through substrates with the following minimum penetration:
 - a. Steel Framing: **5/16 inch (8 mm)**.
 - b. Wood Framing: **1 inch (25 mm)**.
 - c. Concrete and Masonry: **1 inch (25 mm)**.

7. Apply insulation over drainage mat and dry substrates in courses with long edges of boards oriented horizontally.
8. Begin first course of insulation from a level base line and work upward.
9. Begin first course of insulation from screed/track and work upward. Work from perimeter casing beads toward interior of panels if possible.
10. Stagger vertical joints of insulation boards in successive courses to produce running bond pattern. Locate joints so no piece of insulation is less than **12 inches (300 mm)** wide or **6 inches (150 mm)** high. Offset joints not less than **6 inches (150 mm)** from corners of window and door openings and not less than **4 inches (100 mm)** from aesthetic reveals.
 - a. Adhesive Attachment: Offset joints of insulation not less than **6 inches (150 mm)** from horizontal and **4 inches (100 mm)** from vertical joints in sheathing.
 - b. Mechanical Attachment: Offset joints of insulation from horizontal joints in sheathing.
11. Place insulation with adhesive strips and channels, slots, or waves aligned in the vertical position for drainage. Align drainage channels, slots, or waves with channels, slots, or waves in insulation boards above and below.
12. Interlock ends at internal and external corners.
13. Abut insulation tightly at joints within and between each course to produce flush, continuously even surfaces without gaps or raised edges between boards. If gaps greater than **1/16 inch (1.6 mm)** occur, fill with insulation cut to fit gaps exactly; insert insulation without using adhesive or other material.
14. Cut insulation to fit openings, corners, and projections precisely and to produce edges and shapes complying with details indicated.
15. Rasp or sand flush entire surface of insulation to remove irregularities projecting more than **1/32 inch (0.8 mm)** from surface of insulation and to remove yellowed areas due to sun exposure; do not create depressions deeper than **1/16 inch (1.6 mm)**.
16. Cut aesthetic reveals in outside face of insulation with high-speed router and bit configured to produce grooves, rabbets, and other features that comply with profiles and locations indicated. Do not reduce insulation thickness at aesthetic reveals to less than **3/4 inch (19 mm)**.
17. Interrupt insulation for expansion joints where indicated.
18. Install insulation closure blocks using ribbon-and-dab method to create air zones where indicated.
19. Form joints for sealant application by leaving gaps between adjoining insulation edges and between insulation edges and dissimilar adjoining surfaces. Make gaps wide enough to produce joint widths indicated after encapsulating joint substrates with base coat and reinforcing mesh.
20. After installing insulation and before applying field-applied reinforcing mesh, fully wrap board edges. Cover edges of board and extend encapsulating mesh not less than **2-1/2 inches (64 mm)** over front and back face unless otherwise indicated on Drawings.
21. Treat exposed edges of insulation as follows:
 - a. Except for edges forming substrates of sealant joints, encapsulate with base coat, reinforcing mesh, and finish coat.
 - b. Encapsulate edges forming substrates of sealant joints within EIFS or between EIFS and other work with base coat and reinforcing mesh.

- c. At edges trimmed by accessories, extend base coat, reinforcing mesh, and finish coat over face leg of accessories.
22. Coordinate installation of flashing and insulation to produce wall assembly that does not allow water to penetrate behind flashing and water-/weather-resistive barrier.
- B. Expansion Joints: Install at locations indicated, where required by EIFS manufacturer, and as follows:
 1. At expansion joints in substrates behind EIFS.
 2. Where EIFS adjoin dissimilar substrates, materials, and construction, including other EIFS.
 3. Where wall height or building shape changes.
 4. Where EIFS manufacturer requires joints in long continuous elevations.

3.8 BASE-COAT INSTALLATION

- A. Base Coat: Apply to exposed surfaces of insulation in minimum thickness recommended in writing by EIFS manufacturer, but not less than **1/16-inch (1.6-mm)** dry-coat thickness.
- B. Reinforcing Mesh: Embed type indicated below in wet base coat to produce wrinkle-free installation with mesh continuous at corners and overlapped not less than **2-1/2 inches (64 mm)** or otherwise treated at joints to comply with ASTM C 1397 and EIFS manufacturer's written instructions. Do not lap reinforcing mesh within **8 inches (204 mm)** of corners. Completely embed mesh, applying additional base-coat material if necessary, so reinforcing-mesh color and pattern are not visible.
 1. Heavy Duty reinforcing mesh in top coat.
 2. Heavy-duty reinforcing mesh in base coat.
- C. Additional Reinforcing Mesh: Apply strip reinforcing mesh around openings extending **4 inches (100 mm)** beyond perimeter. Apply additional **9-by-12-inch (230-by-300-mm)** strip reinforcing mesh diagonally at corners of openings (re-entrant corners). Apply **8-inch- (200-mm-)** wide strip reinforcing mesh at both inside and outside corners unless base layer of mesh is lapped not less than **4 inches (100 mm)** on each side of corners.
 1. At aesthetic reveals, apply strip reinforcing mesh not less than **8 inches (200 mm)** wide.
 2. Embed strip reinforcing mesh in base coat before applying first layer of reinforcing mesh.
- D. Double Base-Coat Application: Where indicated, apply second base coat in same manner and thickness as first application except without reinforcing mesh. Do not apply until first base coat has cured.

3.9 FINISH-COAT INSTALLATION

- A. Primer: Apply over dry base coat according to EIFS manufacturer's written instructions.
- B. Finish Coat: Apply over dry primed base coat, maintaining a wet edge at all times for uniform appearance, in thickness required by EIFS manufacturer to produce a uniform finish of color and texture matching approved sample and free of cold joints, shadow lines, and texture variations.

1. Texture: As selected by Architect from manufacturer's full range.
 2. Embed aggregate in finish coat according to EIFS manufacturer's written instructions to produce a uniform applied-aggregate finish of color and texture matching approved sample.
- C. Sealer Coat: Apply over dry finish coat, in number of coats and thickness required by EIFS manufacturer.

3.10 INSTALLATION OF JOINT SEALANTS

- A. Prepare joints and apply sealants, of type and at locations indicated, to comply with applicable requirements in Division 7 Section "Joint Sealants" and in ASTM C 1481.
1. Apply joint sealants after base coat has cured but before applying finish coat.
 2. Clean surfaces to receive sealants to comply with indicated requirements and EIFS manufacturer's written instructions.
 3. Apply primer recommended in writing by sealant manufacturer for surfaces to be sealed.
 4. Install sealant backing to control depth and configuration of sealant joint and to prevent sealant from adhering to back of joint.
 5. Apply masking tape to protect areas adjacent to sealant joints. Remove tape immediately after tooling joints, without disturbing joint seal.
 6. Recess sealant sufficiently from surface of EIFS so an additional sealant application, including cylindrical sealant backing, can be installed without protruding beyond EIFS surface.

3.11 FIELD QUALITY CONTROL

- A. Special Inspections: Engage a qualified special inspector to perform the following special inspections:
1. According to ICC-ES AC24.
- B. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- C. EIFS Tests and Inspections: For the following:
1. According to ICC-ES AC24.
- D. Remove and replace EIFS where test results indicate that EIFS do not comply with specified requirements.
- E. Prepare test and inspection reports.

3.12 CLEANING AND PROTECTION

- A. Remove temporary covering and protection of other work. Promptly remove coating materials from window and door frames and other surfaces outside areas indicated to receive EIFS coatings.

Demolition & Construction
at Wheeler Park
for the County of Union

USA # 2014-110

END OF SECTION 07 24 19

SECTION 07 31 13 - ASPHALT SHINGLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes:
 - 1. Fiberglass asphalt shingles for steep roofs.
 - 2. Metal drip edge.
- B. Related Sections include the following:
 - 1. Division 07 Section, "Sheet Metal Flashing and Trim" for metal trims, fascia, copings and related materials.

1.3 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 01 Specification Sections.
- B. Product data for each type of product specified, including details of construction relative to materials, dimensions of individual components, profiles, textures, and colors.
- C. Samples for initial selection in the form of manufacturer's sample finishes showing the full range of colors and profiles available for each type of asphalt shingle indicated.

1.4 QUALITY ASSURANCE

- A. Fire-Test-Response Classification: Where products with a fire-test-response classification are specified, provide asphalt shingles identical to those tested according to ASTM E 108 or UL 790 and listed by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify each bundle of asphalt shingles with appropriate markings indicating fire-test-response classification of applicable testing and inspecting agency.
- B. Wind-Resistance-Test Characteristics: Where wind-resistant asphalt shingles are indicated, provide products identical to those tested according to ASTM D 3161 or UL 997 and passed. Identify each bundle of asphalt shingles with appropriate markings of applicable testing and inspecting agency.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in manufacturer's unopened bundles or containers with labels intact.
- B. Handle and store materials at Project site to prevent water damage, staining, or other physical damage. Store roll goods on end. Comply with manufacturer's recommendations for job-site storage, handling, and protection.

1.6 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installing asphalt shingles only when existing and forecasted weather conditions will permit work to be performed according to manufacturers' recommendations and warranty requirements, and when substrate is completely dry.

1.7 WARRANTY

- A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.
- B. Special Warranty: Submit a written warranty signed by manufacturer agreeing to repair or replace asphalt shingles that fail in materials or workmanship within the specified warranty period. Failures include, but are not limited to, deformation or deterioration of asphalt shingles beyond normal weathering.
 - 1. Warranty Period: Manufacturer's standard but not less than 30 years after date of Substantial Completion.

1.8 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed, are packaged with protective covering for storage, and are identified with labels clearly describing contents.
 - 1. Furnish 1 square (9.29 sq. m) coverage of asphalt shingles, identical to those to be installed, in unbroken bundles.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering asphalt shingles that may be incorporated in the Work include, but are not limited to, the following:
1. Atlas Roofing Corporation, Basis of Design.
 - a. Glass Master
 2. GAF Building Materials Corporation.
 3. (The) Celotex Corporation.
 4. CertainTeed Corporation.
 5. Georgia-Pacific Corp.
 6. Owens-Corning Fiberglass Corp.
- B. Ridge/ Eave Vents:
1. Techni Flo Ridge Vent, Atlas Roofing Corporation,
 2. Cobra Ridge Vent; GAF Building Materials Corporation.
 3. Ridge Filter Shinglevent; Air Vent, Inc.
 4. Ridge Filtervent; Air Vent, Inc. (for Class A).
 5. Roll Vent; Obdyke: Benjamin Obdyke, Inc.
 6. Trimline; Trimline Roof Ventilation Systems.
- C. Waterproof Underlayment:
1. Summit Synthetic Underlayment - Woven polypropylene fabric with UV + water resistive coating. 6 months exposure, synthetic shingle underlayment. ASTM D 6757, Atlas Roofing Corporation
 2. Weather Watch; GAF Building Materials Corporation.
 3. WinterGuard; CertainTeed
 4. Bituthene Ice and Water Shield; Grace: W.R. Grace & Co.

5. Nordshield Ice and WaterGard; Nord Bitumi US, Inc.

2.2 GLASS-FIBER-REINFORCED ASPHALT SHINGLES

- A. Laminated-Strip Asphalt Shingles: ASTM D 3462, laminated, multi-ply overlay construction, glass-fiber reinforced, mineral-granule surfaced, and self-sealing.
 1. Wind Resistance: Passes the wind-resistance-test requirements of ASTM D 3161.
 2. Fire-Test-Response Classification: Class A.
- B. Shingle Features:
 1. Butt Edge: Straight cut.
 2. Strip Size: Manufacturer's standard.
 3. Algae Resistance: Granules treated to resist algae discoloration.
 4. Color and Blends: Burnt Sienna
- C. Hip and Ridge Shingles: Manufacturer's standard, factory-precut units to match asphalt shingles.

2.3 METAL DRIP EDGE, CONCEALED

- A. Sheet Metal Materials: Furnish the following sheet metal materials:
 1. Aluminum Sheets: **ASTM B 209 (ASTM B 209M)**, alloy 3003 H14 with mill finish, minimum **0.032 inch** thick, unless otherwise indicated.
- B. Metal Drip Edge: Brake-formed sheet metal with at least a **2-inch (50-mm)** roof deck flange and a **1-1/2-inch (38-mm)** fascia flange with a **3/8-inch (9.6-mm)** drip at lower edge. Furnish the following material in lengths of 8 or **10 feet (2.5 to 3 m)**.
 1. Material: Aluminum sheets conforming to **ASTM B 209 (ASTM B 209M)**, alloy 3003 H14 with **Baked enamel finish**, minimum **0.032 inch (0.6 mm)** thick, unless otherwise indicated.
- C. Concealed Metal Flashing: Job-cut to sizes and configurations required.
 1. Material: Aluminum Sheets conforming to **ASTM B 209 (ASTM B 209M)**, alloy 3003 H14 with mill finish, minimum **0.032 inch (0.6 mm)** thick, unless otherwise indicated..
- D. Vent Pipe Flashing: Lead conforming to ASTM B 749, Type L51121, at least **1/16 inch (1.6 mm)** thick, unless otherwise indicated. Provide lead sleeve sized to slip over and turn down into pipe, soldered to skirt at slope of roof extending at least **4 inches (100 mm)** from pipe onto roof.

2.4 ACCESSORIES

- A. Felt Underlayment: Type II, **36-inch- (914-mm-)** wide, asphalt-saturated organic felt, complying with ASTM D 226 (No. 30) or ASTM D 4869.
- B. Waterproof Underlayment: Minimum **40-mil- (1-mm-)** thick, self-adhering, polymer-modified, bituminous sheet membrane, complying with ASTM D 1970. Provide primer when recommended by underlayment manufacturer.
- C. Ridge Vent: High-density polypropylene, nonwoven modified polyester, or other UV-stabilized plastic designed to be installed under asphalt shingles at ridge.
- D. Nails: Aluminum or hot-dip galvanized steel, **0.120-inch- (3-mm-)** diameter barbed shank, sharp-pointed, conventional roofing nails with a minimum **3/8-inch- (9.5-mm-)** diameter head and of sufficient length to penetrate **3/4 inch (19 mm)** into solid decking or at least **1/8 inch (3 mm)** through plywood sheathing.
 - 1. Where nails are in contact with flashing, prevent galvanic action by providing nails made from the same metal as that of the flashing.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrate for compliance with requirements for substrates, installation tolerances, and other conditions affecting performance of asphalt shingles. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrates of projections and substances detrimental to application. Cover knotholes or other minor voids in substrate with sheet metal flashing secured with noncorrosive roofing nails.
- B. Coordinate installation with flashings and other adjoining work to ensure proper sequencing. Do not install roofing materials until all vent stacks and other penetrations through roof sheathing have been installed and are securely fastened against movement.

3.3 INSTALLATION

- A. General: Comply with manufacturer's instructions and recommendations but not less than those recommended by ARMA's "Residential Asphalt Roofing Manual" or "The NRCA Steep Roofing Manual."
- B. Rigid Insulation: Apply two layers of extruded polystyrene. One layer 3" thick and one layer 1 1/2" thick.

- C. Apply 2 1/2" thick Vented Nailable Insulation Panels: Composed of 7/16" thick oriented strand board, 1" air space and polyisocyanurate board.
- D. Felt Underlayment: Apply 1 layer of felt underlayment horizontally over entire surface to receive asphalt shingles, lapping succeeding courses a minimum of **2 inches (50 mm)**, end laps a minimum of **4 inches (100 mm)**, and hips and valleys a minimum of **6 inches (150 mm)**. Fasten felt with sufficient number of roofing nails or noncorrosive staples to hold underlayment in place until asphalt shingle installation.
 - 1. Omit felt underlayment at areas of waterproof underlayment. Lap felt underlayment over waterproof underlayment as recommended by manufacturer but not less than **2 inches (50 mm)**.
- E. Waterproof Underlayment: Apply waterproof underlayment at eaves. Cover deck from eaves to at least **36 inches** inside exterior wall line.
- F. Flashing: Install metal flashing and trim as indicated and according to details and recommendations of the "Asphalt Roofing" section of "The NRCA Steep Roofing Manual" and ARMA's "Residential Asphalt Roofing Manual."
- G. Install asphalt shingles, beginning at roof's lower edge, with a starter strip of roll roofing or inverted asphalt shingles with tabs removed. Fasten asphalt shingles in the desired weather exposure pattern; use number of fasteners per shingle as recommended by manufacturer. Use vertical and horizontal chalk lines to ensure straight coursing.
 - 1. Cut and fit asphalt shingles at valleys, ridges, and edges to provide maximum weather protection. Provide same weather exposure at ridges as specified for roof. Lap asphalt shingles at ridges to shed water away from direction of prevailing wind.
 - 2. Use fasteners at ridges of sufficient length to penetrate sheathing as specified.
- H. Ridge Vents: Install ridge vents according to manufacturer's instructions.

3.4 ADJUSTING

- A. Replace any damaged materials installed under this Section with new materials that meet specified requirements.

END OF SECTION 07 31 13

SECTION 07 46 17 – ALUMINUM SOFFIT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Aluminum soffit.
- B. Related Sections include the following:
 - 1. Division 07 Section "Joint Sealants" for field-applied sealants.

1.3 SUBMITTALS

- A. Product Data: For each type of product specified. Include identification of materials; dimensions of individual components; installation instructions; and available profiles, textures, and colors.
- B. Samples for Initial Selection: Manufacturer's sample finishes showing the full range of colors, profiles, and textures available.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer who has completed soffit installations similar in material, design, and extent to that indicated for Project that has resulted in construction with a record of successful in-service performance.
- B. Source Limitations for Siding and Accessories: Obtain each color, texture, pattern, and type of siding and related accessories from one source with resources to provide products of consistent quality in appearance and physical properties without delaying the Work.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in manufacturer's unopened packages or bundles with labels intact.
- B. Store materials in a dry, well-ventilated, weathertight place. Comply with manufacturer's written instructions for storage, handling, and protection.

1.6 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with soffit installation only if existing and forecasted weather conditions permit materials to be installed according to manufacturer's written instructions and if substrate is completely dry.

1.7 WARRANTY

- A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.
- B. Special Project Warranty: Submit a written warranty, executed by soffit manufacturer, agreeing to repair or replace soffit that fails in materials or workmanship within the specified warranty period. Failures include, but are not limited to, cracking, deforming, fading, or otherwise deteriorating beyond normal weathering. Fading is defined as loss of color, after cleaning with product recommended by manufacturer, of more than 4 color-difference units as measured according to ASTM D 2244.
 - 1. Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Aluminum Soffit:
 - a. Alside, Inc., basis of design, or approved equal.
 - b. Peterson Aluminum Company, or approved equal.
 - c. Alcoa Building Products, or approved equal.
 - d. AmeriMark Building Products, Inc. , or approved equal.
 - e. Gentek Building Products, or approved equal.
 - f. Reynolds Metals Co. , or approved equal.

2.2 SOFFIT

- A. Aluminum Soffit: Aluminum soffit complying with AAMA 1402, fabricated from aluminum sheet in alloy recommended by siding manufacturer, and as follows:
 - 1. Pattern: 16-inch (406-mm) exposure in quadruple 4-inch (102-mm) style.

2. Ventilation (New Building only): Provide half perforated soffit and half unperforated soffit
3. Thickness: **0.019 inch (0.5 mm)** nominal.
4. Finish: Manufacturer's standard primer and baked-on acrylic topcoat.

2.3 ACCESSORIES

- A. Soffit Accessories: Provide starter strips, edge trim, cap, and other items as recommended by manufacturer for building configuration; match type of soffit.
- B. Decorative Accessories: Provide the following types of decorative accessories as indicated:
 1. Moldings and trim.
- C. Fasteners: Noncorrosive aluminum siding nails, in sufficient length to penetrate a minimum of **1 inch (25 mm)** into substrate. Provide prefinished fasteners in color to match siding where face nailing is unavoidable.

2.4 COLORS AND TEXTURES

- A. Where manufacturer's standard products are indicated, provide siding and accessories complying with the following requirements:
 1. Provide Architect's selections from manufacturer's full range of colors and textures for soffit and accessories of type indicated to match existing. Accessories may be required to match siding or to be of a different color or texture as selected by Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates for compliance with requirements for substrates, installation tolerances, and other conditions affecting performance of soffit. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrates of projections and substances detrimental to application.
- B. Coordinate installation with flashings and other adjoining construction to ensure proper sequencing.

3.3 INSTALLATION

- A. General: Comply with soffit manufacturer's written installation instructions applicable to products and applications indicated, unless more stringent requirements apply. Center nails in elongated nailing slots without binding soffit to allow for thermal movement.
- B. Isolate dissimilar metals by separating from soffit with rubber gaskets, elastomeric sealant, or rubber washers where fasteners penetrate siding. Dissimilar metals behind soffit may be isolated by covering with polyethylene film.

3.4 ADJUSTING AND CLEANING

- A. Remove and replace damaged, improperly installed, or otherwise defective soffit materials with new materials complying with specified requirements.
- B. Clean finished surfaces according to soffit manufacturer's written instructions and maintain in a clean condition during construction.

END OF SECTION 07 46 17

SECTION 07 62 00 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes sheet metal flashing and trim in the following categories:
 - 1. Exposed trim and fascia.
 - 2. Miscellaneous sheet metal accessories.
 - 3. Gutters and Downspouts
 - 4. Downspout Boots.
- B. Related Sections include the following:
 - 1. Division 07 Section, "Asphalt Shingles" for asphalt shingles and related materials.

1.3 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 01 Specification Sections.
- B. Product Data including manufacturer's material and finish data, installation instructions, and general recommendations for each specified flashing material and fabricated product.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experience Installer who has completed sheet metal flashing and trim work similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

1.5 PROJECT CONDITIONS

- A. Coordinate Work of this Section with interfacing and adjoining Work for proper sequencing of each installation. Ensure best possible weather resistance, durability of Work, and protection of materials and finishes.

PART 2 - PRODUCTS

2.1 METALS

- A. Aluminum: Alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated and with not less than the strength and durability of alloy and temper designated below:

- 1. Aluminum Sheet: **ASTM B 209 (ASTM B 209M)**, 5005-H14, with a minimum thickness of **0.050 inch (1.2 mm)**.

2.2 MISCELLANEOUS MATERIALS AND ACCESSORIES

- A. Fasteners: Same metal as sheet metal flashing or other noncorrosive metal as recommended by sheet metal manufacturer. Match finish of exposed heads with material being fastened.
- B. Metal Accessories: Provide sheet metal clips, straps, anchoring devices, and similar accessory units as required for installation of Work, matching or compatible with material being installed; noncorrosive; size and thickness required for performance.

2.3 FABRICATION, GENERAL

- A. Sheet Metal Fabrication Standard: Fabricate sheet metal flashing and trim to comply with recommendations of SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of the item indicated.
- B. Comply with details shown to fabricate sheet metal flashing and trim that fit substrates and result in waterproof and weather-resistant performance once installed. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
- C. Form exposed sheet metal Work that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems.
- D. Seams: Fabricate nonmoving seams in aluminum with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
- E. Expansion Provisions: Space movement joints at maximum of **10 feet (3 m)** with no joints allowed within **24 inches (610 mm)** of corner or intersection. Where lapped or bayonet-type expansion provisions in Work cannot be used or would not be sufficiently weatherproof and waterproof, form

expansion joints of intermeshing hooked flanges, not less than **1 inch (25 mm)** deep, filled with mastic sealant (concealed within joints).

- F. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate elastomeric sealant to comply with SMACNA standards.
- G. Separate metal from noncompatible metal or corrosive substrates by coating concealed surfaces at locations of contact with asphalt mastic or other permanent separation as recommended by manufacturer.
- H. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of sheet metal exposed to public view.
- I. Fabricate cleats and attachment devices from same material as sheet metal component being anchored or from compatible, noncorrosive metal recommended by sheet metal manufacturer.
 - 1. Size: As recommended by SMACNA manual or sheet metal manufacturer for application but never less than thickness of metal being secured.

2.4 SHEET METAL FABRICATIONS

- A. General: Fabricate sheet metal items in thickness or weight needed to comply with performance requirements but not less than that listed below for each application and metal.
- B. Exposed Trim and Fascia: Fabricate from the following material:
 - 1. Aluminum: **0.050 inch (1.2 mm)** thick.
 - 2. Fabricate to sizes and profiles as indicated. Provide cleats, concealed splice plates and welded prefabricated corner units.
 - 3. Provide Metal Era Perma-Tite System 200, or approved equal.
- C. Aluminum Fascia/Gravel Stops, etc.
 - 1. Shop fabricate work to profiles and sizes shown.
 - 2. Roof edge fascia as indicated, formed of .050 inch smooth aluminum, with concealed nailing and retainer, mastic-covered concealed splice plates, prefabricated (mitered and welded) corner units.
- D. Gutters and Downspouts
 - 1. Design and installation shall be as shown in SMACNA Architectural Manual, using aluminum as follows:
 - a. Gutters: .040"
 - b. Conductors: .060"
 - c. Aluminum strainer at all conductor heads and collars.

E. Leaf Guards

1. Low profile leaf guard, 0.027 gauge perforated aluminum.
 - a. Fastened to the top of the gutter
 - b. Color: Pearl Gray.
2. Leaf Defender Gutter Guard, or approved equal

2.5 DOWNSPOUT BOOTS

- A. Cast iron body and strap with securing strap for mounting in lengths as indicated on the drawings.
- B. Jay R. Smith Mfg. Co., basis of design.
 1. Model # 1787, 4" round.

2.6 ALUMINUM FINISHES

- A. General: Comply with Aluminum Association's (AA) "Designation System for Aluminum Finishes" for finish designations and application recommendations.
- B. High-Performance Organic Coating Finish: AA-C12C42R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: acid chromate-fluoride-phosphate conversion coating; Organic Coating: as specified below). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturer's instructions.
 1. Fluoropolymer 2-Coat Coating System: Manufacturer's standard 2-coat, thermocured system composed of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with AAMA 605.2.
 - a. Color and Gloss: As selected by Architect from manufacturer's full range of choices for color and gloss or as required to match existing.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions under which sheet metal flashing and trim are to be installed and verify that Work may properly commence. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Unless otherwise indicated, install sheet metal flashing and trim to comply with performance requirements, manufacturer's installation instructions, and SMACNA's "Architectural

Sheet Metal Manual." Anchor units of Work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners where possible, and set units true to line and level as indicated. Install Work with laps, joints, and seams that will be permanently watertight and weatherproof.

- B. Install exposed sheet metal Work that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
- C. Roof-Edge Flashings: Secure metal flashings at roof edges according to FM Loss Prevention Data Sheet 1-49 for specified wind zone.
- D. Expansion Provisions: Provide for thermal expansion of exposed sheet metal Work. Space movement joints at maximum of **10 feet (3 m)** with no joints allowed within **24 inches (610 mm)** of corner or intersection. Where lapped or bayonet-type expansion provisions in Work cannot be used or would not be sufficiently weatherproof and waterproof, form expansion joints of intermeshing hooked flanges, not less than **1 inch (25 mm)** deep, filled with mastic sealant (concealed within joints).
- E. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets to be soldered to a width of **1-1/2 inches (38 mm)**, except where pre-tinned surface would show in finished Work.
- F. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate elastomeric sealant to comply with SMACNA standards. Fill joint with sealant and form metal to completely conceal sealant.
 - 1. Use joint adhesive for nonmoving joints specified not to be soldered.
- G. Seams: Fabricate nonmoving seams in aluminum with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
- H. Separations: Separate metal from noncompatible metal or corrosive substrates by coating concealed surfaces, at locations of contact, with asphalt mastic or other permanent separation as recommended by manufacturer.
 - 1. Underlayment: Where installing stainless steel or aluminum directly on cementitious or wood substrates (including pressure treated lumber), install a slip sheet of red-rosin paper and a course of polyethylene underlayment.
 - 2. Bed flanges of Work in a thick coat of roofing cement where required for waterproof performance.

3.3 ROOF DRAINAGE SYSTEM INSTALLATION

- A. General: Install sheet metal roof drainage items to produce complete roof drainage system according to SMACNA recommendations and as indicated. Coordinate installation of roof perimeter flashing with installation of roof drainage system.
- B. Hanging Gutters: Join sections with riveted and soldered joints or with lapped joints sealed with elastomeric sealant. Provide for thermal expansion. Attach gutters at eave or fascia to firmly anchored gutter brackets and straps spaced not more than **36 inches (900 mm)** apart. Provide end closures and seal watertight with sealant. Slope to downspouts.
 - 1. Fasten gutter spacers to front and back of gutter.
 - 2. Loosely lock straps to front gutter bead and anchor to roof deck.
 - 3. Anchor and loosely lock back edge of gutter to continuous cleat.
 - 4. Install gutter with expansion joints at locations indicated but not exceeding **50 feet (15.24 m)** apart. Install expansion joint caps.
 - 5. Install continuous gutter screens on gutters with noncorrosive fasteners, removable for cleaning gutters.
- C. Leaf Guards: Securely fasten leaf guards to top of gutters in accordance with the written instructions by the manufacturer.
- D. Downspouts: Join sections with **1-1/2-inch (38-mm)** telescoping joints. Provide fasteners designed to hold downspouts securely **1 inch (25 mm)** away from walls; locate fasteners at top and bottom and at approximately **60 inches (1500 mm)** o.c. in between.
 - 1. Provide elbows at base of downspout to direct water away from building.
 - 2. Connect downspouts to underground drainage system indicated.

3.4 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces, removing substances that might cause corrosion of metal or deterioration of finishes.
- B. Provide final protection and maintain conditions that ensure sheet metal flashing and trim Work during construction is without damage or deterioration other than natural weathering at the time of Substantial Completion.

END OF SECTION 07 62 00

SECTION 07 92 00 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes, but is not limited to, joint sealants for the following locations:
 - 1. Sealant Type 1: Exterior joints in vertical surfaces and horizontal non-traffic surfaces as indicated below:
 - a. Control and expansion joints in unit masonry.
 - b. Joints of stonework set with mortar including copings and cornices.
 - c. Perimeter joints of frames of doors and windows.
 - d. Other joints as indicated.
 - 2. Sealant Type 2: Interior and exterior joints in horizontal traffic surfaces as indicated below:
 - a. Control, expansion, and isolation joints in cast-in-place concrete slabs, sidewalks, tile and carpet flooring.
 - 3. Sealant Type 3: Interior joints in vertical surfaces and horizontal non-traffic surfaces as indicated below:
 - a. Control and expansion joints on exposed interior surfaces of exterior walls.
 - b. Perimeter joints of exterior openings where indicated.
 - c. Vertical control joints on exposed surfaces of interior unit masonry and concrete walls and partitions.
 - d. Perimeter joints between interior wall surfaces and frames of interior doors, windows, and elevator entrances.
 - e. Perimeter joints of toilet fixtures.
 - f. Other joints as indicated.
 - 4. Sealant Type 4: Interior sanitary joints in vertical and horizontal surfaces as indicated below:
 - a. Perimeter joints of fixtures in bathroom, lavatory and kitchen applications.
 - 5. Sealant type 5: Interior and exterior joints continuously immersed in water as indicated below:
 - a. Control and expansion joints in swimming pools and fountains.
 - 6. Sealant Type 6: Interior construction fire rated joints indicated on the drawings:
 - a. Expansion and control joints on interior masonry and concrete walls.
 - b. Perimeter joints between interior wall surfaces and frames of interior doors and windows.

A. Related Sections:

1. Division 04 Section "Unit Masonry" for masonry control and expansion joint fillers and gaskets.
2. Division 08 Section "Glazing" for glazing sealants.
3. Division 09 Section "Gypsum Board" for sealing perimeter joints.
4. Division 32 Section "Concrete Paving Joint Sealants" for sealing joints in pavements, walkways, and curbing.

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 01 Specification Sections.
- B. Product Data: For each joint-sealant product indicated.
- C. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
- D. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in ~~1/2-inch-~~ (13-mm-) wide joints formed between two ~~6-inch-~~ (150-mm-) long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.
- E. Joint-Sealant Schedule: Include the following information:
 1. Joint-sealant application, joint location, and designation.
 2. Joint-sealant manufacturer and product name.
 3. Joint-sealant formulation.
 4. Joint-sealant color.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who has completed joint sealant applications similar in material, design, and extent to that indicated for Project that have resulted in construction with a record of successful in-service performance for a period of three years.
- B. Single Source Responsibility for Joint Sealant Materials: Obtain joint sealant materials from a single manufacturer for each different product required.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration period for use, pot life, curing time, and mixing instructions for multicomponent materials.

- B. Store and handle materials in compliance with manufacturer's recommendations to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.6 PROJECT CONDITIONS

- A. Environmental Conditions: Do not proceed with installation of joint sealants under the following conditions:
 - 1. When ambient and substrate temperature conditions are outside the limits permitted by joint sealant manufacturer.
 - 2. When ambient and substrate temperature conditions are outside the limits permitted by joint sealant manufacturer or below 40 deg F (4 deg C).
 - 3. When joint substrates are wet.
- B. Joint Width Conditions: Do not proceed with installation of joint sealants where joint widths are less than allowed by joint sealant manufacturer for application indicated.
- C. Joint Substrate Conditions: Do not proceed with installation of joint sealants until contaminants capable of interfering with their adhesion are removed from joint substrates.

1.7 SEQUENCING AND SCHEDULING

- A. Sequence installation of joint sealants to occur not less than 21 nor more than 30 days after completion of waterproofing, unless otherwise indicated.

1.8 WARRANTY

- A. Special Installer's Warranty: Installer's standard form in which Installer agrees to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period. Provide five (5) year written warranty covering correction of defective work within a five year period after Date of Substantial Completion.
- B. Special Manufacturer's Warranty: Provide ten (10) year material warranty from date of Substantial Completion for silicone sealants, provide five (5) year material warranty from date of Substantial Completion for urethane sealants and provide two (2) year material warranty from date of Substantial Completion for acrylic latex sealants.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, joint fillers, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
- B. Colors: Provide color of exposed joint sealants to comply with the following:
 - 1. Provide selections made by Architect from manufacturer's full range of standard and special colors for products of type indicated.

2.2 SEALANTS

- A. Sealant Type 1: For sealing exterior joints, provide a multi-component polyurethane sealant complying with ASTM C-920.
 - 1. Provide "Dynatrol II" sealant by Pecora, Dymeric 240 FC by Tremco or approved equal.
- B. Sealant Type 2: For sealing interior or exterior joints, provide a multi-component high performance polyurethane sealant complying with ASTM C-920.
 - 1. Provide Urexpan NR-200/Dynatred sealant by Pecora or approved equal.
- C. Sealant Type 3: For all interior joints, provide an acrylic latex, one part non sag sealant compound; recommended by manufacturer for general use as an interior exposed building construction sealant complying with ASTM C-834.
 - 1. Provide one of the following:
 - a. AC -20 + Silicone by Pecora Corporation, Tremflex 834 by Tremco or approved equal.
- D. Sealant Type 4: For use at all joints at plumbing fixtures, provide one-part silicone sealant complying with ASTM C-920 and USDA approval.
 - 1. Provide one of the following:
 - a. Pecora 898 Silicone, Tremco Tremsil 200 or approved equal.
- E. Sealant Type 5: For interior and exterior joints, provide two-part high performance polysulfide sealant complying with ASTM C-920, C-1247 and NSF Standards 61, Section 6.
 - 1. Provide the following:
 - a. Synthacalk GC-2+ by Pecora Corporation or approved equal.

2.3 FIRE RATED EXPANSION JOINTS

- A. Sealant Type 6: Construction fire rated joints as indicated on the drawings with the following components complying with ANSI/UL 263 and ASTM E-119, one to four hour ratings.
 - 1. Joint Filler, "Ultra Block" or "Fibrex Mineral Wool" as recommended by Pecora, in thickness required to fill joints.
 - 2. Joint Sealant, "Dynatrol II" two part polyurethane as manufactured by Pecora.

2.4 JOINT SEALANT BACKING

- A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Plastic Foam Joint Fillers: Preformed, compressible, resilient, nonstaining, nonwaxing, nonextruding strips of flexible plastic foam of material indicated below and of size, shape, and density to control sealant depth and otherwise contribute to producing optimum sealant performance:
 - 1. Closed-cell polyethylene foam, nonabsorbent to liquid water and gas, nonoutgassing in unruptured state.
 - 2. Open-cell polyurethane foam, nonoutgassing backer rod.
- C. Elastomeric Tubing Joint Fillers: Neoprene, butyl, EPDM, or silicone tubing complying with ASTM D 1056, nonabsorbent to water and gas, capable of remaining resilient at temperatures down to **-26 deg F (-32 deg C)**. Provide products with low compression set and of size and shape to provide a secondary seal, to control sealant depth, and otherwise contribute to optimum sealant performance.
- D. Bond-Breaker Tape: Polyethylene tape or other plastic tape as recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.
 - 1. Provide Pecora #531 Bond-breaker Tape, or approved equal.

2.5 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming in any way joint substrates and adjacent nonporous surfaces, and formulated to promote optimum adhesion of sealants with joint substrates.

- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint sealant performance. Do not proceed with installation of joint sealants until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with recommendations of joint sealant manufacturer and the following requirements:
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 - 2. Clean concrete, masonry, unglazed surfaces of ceramic tile, and similar porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.
 - 3. Remove laitance and form release agents from concrete.
 - 4. Clean metal, glass, porcelain enamel, glazed surfaces of ceramic tile, and other nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.
- B. Joint Priming: Prime joint substrates where indicated or where recommended by joint sealant manufacturer based on preconstruction joint sealant-substrate tests or prior experience. Apply primer to comply with joint sealant manufacturer's recommendations. Confine primers to areas of joint sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint sealant manufacturer's printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply.
- B. Installation of Sealant Backings: Install sealant backings to comply with the following requirements:
 - 1. Install joint fillers of type indicated to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - a. Do not leave gaps between ends of joint fillers.
 - b. Do not stretch, twist, puncture, or tear joint fillers.
 - c. Remove absorbent joint fillers that have become wet prior to sealant application and replace with dry material.
 - 2. Install bond breaker tape between sealants where backer rods are not used between sealants and joint fillers or back of joints.
- C. Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration, and providing uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability. Install sealants at the same time sealant backings are installed.
- D. Tooling of Nonsag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated, to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.
 - 1. Provide concave joint configuration, unless otherwise indicated.

3.4 CLEANING

- A. Clean off excess sealants or sealant smears adjacent to joints as work progresses by methods and with cleaning materials approved by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so that and installations with repaired areas are indistinguishable from original work.

Demolition & Construction
at Wheeler Park
for the County of Union

USA # 2014-110

END OF SECTION 07 92 00

JOINT SEALANTS

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08 16 13 – FIBERGLASS REINFORCED PLASTIC DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 DESCRIPTION OF WORK

- A. Extent of fiberglass reinforced plastic doors and frames are indicated on drawings and schedules.

1.3 SUBMISSIONS

- A. Submit manufacturer's product specifications, technical product data, standard details, and installation recommendation for each type of door product required. Include the following information:
 - 1. Fabrication methods, including internal construction and reinforcement for doors, materials used and description of molding process.
 - 2. Specifications for door thickness, resin type, core material, method of construction, finish color and glazing.
 - 3. Hardware.
 - 4. Accessories.
- B. Submit shop drawings for fabrication and installation of doors and frames, including the following:
 - 1. Door types.
 - 2. Elevations.
 - 3. Dimensions and clearances.
 - 4. Hardware and reinforcement with mounting heights.
 - 5. Frame mounting details.
 - 6. Light and louver installation.
 - 7. Glazing details.
- C. Submit pairs of samples of each type and color finish on 6" square sheets.
- D. Submit certified test data, reports, etc. as required to show code compliance with the following requirements:
 - 1. IBC Chapter 8, Section 803.1 – Classification (of interior finish materials)
 - 2. IBC Chapter 8, Section 803.1 – Smoke Development
 - a. Interior wall and ceiling finish materials shall have a smoke-developed rating less than 450 when tested in accordance with ASTM E84.
 - b. IBC Chapter 26, Section 2603.3 – Surface Burning Characteristics

- 1) Foam Plastic Cores shall have a Flame Spread Rating less than 75 &
 - 2) Smoke Developed Rating less than 450 when tested in the maximum thickness intended for use in accordance with ASTM E84.
- c. IBC Chapters 17 & 26 for Labeling requirements

1.4 QUALITY ASSURANCE

- A. Provide doors produced by single manufacturer with not less than 5 years successful experience in fabrication of assemblies of type and quality required.
- B. Doors shall be installed by firm that has not less than 5 years successful experience in installation of systems similar to those required.

1.5 PROJECT CONDITIONS

- A. Check openings by field measurement before fabrication to ensure proper fitting of work; show measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay in the work. Where necessary, proceed with fabrication without field measurements, and coordinate fabrication tolerances to ensure proper fit.
- B. Deliver doors packed in wooden boxes with foam sheet separators.
- C. Store doors in original shipping containers in dry, indoor location with adequate ventilation. Do not wrap with plastic sheet.

1.6 SPECIAL PROJECT WARRANTY

- A. Submit written warranty, executed by Contractor, installer and manufacturer, agreeing to repair or replace units, including reglazing, which fail in materials or workmanship within specified warranty period. Failures include, but are not necessarily limited to structural failures including excessive deflection, faulty operation, delamination, corrosion, flatness and deterioration of finishes. This warranty shall be in addition to and not a limitation of other rights Owner may have against Contractor under Contractor Documents.
 1. Warranty period is lifetime of the installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with all physical and code requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:
 1. Chase Door or approved equal.
 2. Tiger Doors, Inc., or approved equal.

3. Warminster Fiberglass, or approved equal.

2.2 DOORS

- A. Construction: Seamless, press molded, fiberglass reinforced plastic.
- B. Stiles and Rails: High modulus, pultruded, fiberglass reinforced plastic, rectangular tube subframe. Miter and joint tubes internally at corners with solid polymer blocks. Provide tubular midrail across width of door at lock height. Provide additional horizontal rails at midpoints between midrail and top rail, and midrail and bottom rail. Provide molded in, plastic edge strips attached to subframe stiles for machining of hardware mortises.
- C. Core: Triangular, $\frac{3}{8}$ " cell, phenolic resin impregnated kraft paper completely enclosed within stile and rail subframe.
- D. Internal Reinforcement: High modulus, pultruded, tubular fiberglass reinforced plastic or high density polymer compression block at all hardware locations and corners.
- E. Faces: Chemical resistant, thermosetting polyester resin with glass fiber reinforcing layers, chopped strand mat layers to provide bond integrity between gel coat, laminated facings and internal door structure, structural reinforcement of knitted, multi-layer material with layers of unidirectional glass fiber oriented in both vertical and horizontal directions.
- F. Finish: Integrally molded, 25 to 30 mils thick, ultraviolet light stabilized, marine grade, NPG isophthalic, polyester gel coat with slightly textured, semi-gloss finish.
 1. Color to be Chocolate Brown.
- G. Astragals: Heavy duty, pultruded fiberglass reinforced plastic angle on meeting stile edge of inactive leaf of pairs of doors.
- H. Vision Panels: Factory prepare vision panels openings. Enclose opening with plastic stiles and rails incorporated into door subframe after press molding and machining. Fuse stiles and rails to both door faces. Install glazing against molded face flanges with glazing tape. Provide square plastic glazing stops with stainless steel screws.

2.3 FASTENERS

- A. Material: Provide all fasteners and metal appurtenances fabricated of 304 stainless steel.

2.4 FABRICATION

- A. Fabricated all plastic components with minimum properties as follows:
 1. Tensile strength; 30,000 psi per ASTM D638.
 2. Compressive strength; 30,000 psi per ASTM D695.
 3. Flexural strength; 30,000 psi per ASTM D790.
 4. Flexural modulus; 1,600,000 psi per ASTM D790.

5. Shear strength; 4,500 psi per ASTM D2846.
 6. Impact, notches; 25 ft. -lb./in. per ASTM D256.
 7. Barcol hardness; 50 per ASTM D2583.
- B. Fabricated core with sufficient molding pressure and gel time to allow for penetration of resin into cellular structure or core to maximize shear and peel strengths at interfaces.
- C. Laminate fiberglass reinforced plastic face sheets while wet and uncured to internal door subframe/core assembly, and press mold under heat and pressure. Integrally fuse door panel over entire surface area. Retain doors under pressure during curing.
- D. Hardware Preparation:
1. Factory mortise and drill doors for hinges. Provide #12 x 3" long stainless steel screws for hinge attachment.
 2. Provide cutouts in doors for locks as required.
 3. Factory machine and drill frames for hinges. Provide #12 x 1 ¼ " long stainless steel screws for hinge attachment.
 4. Provide cutouts in frames for lock strike as required.

2.5 FRP FRAMES

- A. Non-Labeled FRP Frames:
1. Design: FRP Door frames furnished under this specification shall utilize a high-modulus pultruded structural FRP shape. The frame section shall be standard double rabbeted 5-3/4" deep x 2" face, 3/16" thick, with integral 5/8" doorstop with 1 15/16" soffits, to match typical hollow metal configurations.
 2. Corner Joints: KD jambs and header shall be joined at corners via miter connections. Post and beam corners will not be acceptable. Exposed fasteners for miter connections will not be acceptable except for wrap wall applications. One piece frames shall be factory joined at corners via miter connections then chemically welded with FRP material and ground visibly smooth at frame face. Mechanical joints will not be accepted in lieu of welded frames if specified.
 3. Hardware Reinforcements: FRP reinforcing shall be chemically welded to door frame material at required locations. Minimum screw pullout strength of 1100 lb per #12 x 1" sheet metal screw is required. Mechanically fastened reinforcements are not permitted.
 4. Anchors:
 - a. BOLT-IN: Provide manufacturer's required number of 5/16" diameter x 4" long flat head stainless steel bolts and lead shield anchors (optional expanding sleeve type for masonry or concrete walls, machine screw with nut and washers for structural steel openings, #14 x 4" stainless steel flat head sheet metal screws for wood or steel stud openings) per jamb side. Include extra anchors for additional frame height in two foot increments above 8'-0". Provide single bolt anchor at center of all headers over four feet in nominal width. Stainless Steel bolts shall be furnished by the factory.

5. Finish: Frames shall have a factory applied two-part aliphatic polyurethane topcoat, to match the color and sheen of the doors, for superior weatherability. Gelcoat may be sprayed onto the frame as a secondary coating if required.

2.6 MECHANICAL PROPERTIES AND TEST PERFORMANCE

- A. Pultruded structural shapes for stiles; rails, frames, and astragals shall exhibit the following minimum longitudinal coupon properties (per ASTM):
 1. Tensile strength (D638) 30,000 psi.
 2. Comprehensive strength (D695) 30,000 psi.
 3. Flexural strength (D790) 30,000 psi.
 4. Flexural modulus (D790) 1,600,000 psi.
 5. Shear strength (D2846) 4,500 psi.
 6. Impact, notched (D256) 25 ft-lb/in.
 7. Barcol hardness (D2853) 50.
 8. Fire Resistance (E-84) Class I.
- B. Core material shall exhibit the following minimum coupon properties (per ASTM):
 1. Core material must comply with the International Building Code (IBC) chapter 26 requirements for use with a plastic skin.
 2. Shear strength, longitudinal direction (C273) 68.2 psi.
 3. Shear strength, transverse direction (C273) 25.8 psi.
 4. Shear modulus, longitudinal direction (C273) 6940 psi.
 5. Shear modulus, transverse direction (C273) 1878 psi.
 6. Shear elongation, longitudinal direction (C393 short beam) 1.79%.
 7. Shear elongation, transverse direction (C393 short beam) 2.72%.
 8. Maximum facing stress, longitudinal direction (C393 short beam) 735 psi.
 9. Maximum facing stress, transverse direction (C393 short beam) 289 psi.
 10. Maximum core shear stress, longitudinal direction (C393 short beam) 63.8 psi.
 11. Maximum core shear stress, transverse direction (C393 short beam) 24.9 psi.

12. Modulus of elasticity (EI) per 1" width, longitudinal direction (C393 short beam) 4.92E+04 psi.
 13. Modulus of elasticity (EI) per 1" width, transverse direction (C393 short beam) 1.97E+04 psi.
 14. Maximum facing stress, longitudinal direction (C393 long beam) 9011 psi.
 15. Maximum facing stress, transverse direction (C393 long beam) 4727 psi.
 16. Maximum core shear stress, longitudinal direction (C393 long beam) 48.3 psi.
 17. Maximum core shear stress, transverse direction (C393 long beam) 23.5psi.
 18. Modulus of elasticity (EI) per 1" width, longitudinal direction (C393 long beam) 1.14E+05 psi.
 19. Modulus of elasticity (EI) per 1" width, transverse direction (C393 long beam) 7.23E+05 psi.
 20. Stiffness "D", longitudinal direction (C393 long beam) 379,270 psi.
 21. Stiffness "D", longitudinal direction (C393 long beam) 260,608 psi.
 22. Compressive strength (C365) 53 psi.
 23. Compressive modulus (C365) 2110 psi.
 24. Density (C271) 2.42 lb/ft³.
- C. C. Adhesive shall exhibit the following minimum coupon properties (per SAE)
1. Tensile Strength (D882-83A modified) minimum 2000 psi.
 2. 8 day 25° C at 100% humidity Cross Peel (SAE J1553) minimum 330 psi.
 3. 7 day immersion in seawater Cross Peel (SAE J1553) minimum 330 psi.
 4. 30 day immersion in saltwater Cross Peel (SAE J1553) minimum 330 psi.
 5. 72 hour immersion in gasoline Cross Peel (SAE J1553) minimum 330 psi.
 6. 72 hour immersion in 20% sulfuric acid Cross Peel (SAE J1553) minimum 300 psi.
- D. D. ANSI A250.4 1,000,000 cycle test
1. 4' x 8' door (up to a full light) and frame successfully tested in excess of 1,000,000 cycles with no failure of any of the design features of the door or frame.
- E. UL 10b, UL 10c / UBC7-2 positive pressure

1. Singles and pairs, with component listings for both FRP doors and FRP frames

2.7 FASTENERS

- A. All fasteners for all hardware shall be type 304 CRSS (18-8 series corrosion resistant stainless steel) with no exception. No carbon steel or aluminum components shall be used.

2.8 HARDWARE

- A. Doors shall be factory mortised and drilled for mortise template butt hinges, with #12x2” long stainless steel screws pre-installed for hinge attachment. Provide and Install hardware as listed in other section(s). If manufacturer’s standard screws do not comply, supplier shall furnish suggested screw size and type in 301 CRSS (18-8 SS).
- B. Frames shall be factory machined and drilled for all hardware requiring mortises, with #12x1” long stainless steel screws pre-installed for hinge attachment.
- C. Hardware shall be furnished as listed in section 08710 or as so designated in appropriate section, and shall be coordinated by GC and installed by experienced mechanics.
- D. Supplier shall furnish manufacturer’s standard templates, installation instructions, or full size approved door and frame preparation instructions as approved by the architect and as required by door and frame manufacturer prior to door and frame factory initiated manufacture. Standard factory lead-time for production of FRP doors and frames shall commence only and when all distributor required preparation information is received and acknowledged by the door and frame manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of entrance and storefront systems. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 IDENTIFICATION

- A. Factory mark all doors and frames using a chemical resistant plastic tag or indelible marker with identifying number, keyed to shop drawings, prior to shipment.

3.3 INSTALLATION

- A. Frames: Install in strict accordance with manufacturer’s printed instructions. Set plumb and square, using shims for bolt-in of existing openings, or wood bracing prior to grouting of jambs.

Use at least two 2x6 wood spreaders inside frame to maintain critical opening dimensions during grouting.

- B. Doors: Hang per manufacturer's printed instructions using special screws provided for hinge attachment. Install doors to swing freely and to stand open at any angle. After installation make final adjustments to hardware to allow for proper door operation and latching. All surface applied hardware shall be thru bolted.

3.4 CLEANING

- A. Clean exposed surfaces of FRP doors and frames with a mild, non-abrasive cleaner and water.
- B. Only chemical cleaning solution as recommended and available from manufacturer shall be used to assure neither finish nor door and frame properties are contaminated, nor compromised. Upon cleaner purchase, door manufacturer shall provide one package of TigerCare® directly to owner's representative and instruct owner's personnel in maintenance procedures.

3.5 PROTECTION

- A. Institute protective measures required throughout remainder of construction period to ensure that doors and frames will be without damage or deterioration at time of acceptance.

END OF SECTION 08 16 13

SECTION 08 33 00 - COILING SECURITY COUNTER SHUTTERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following types of overhead coiling doors:
 - 1. Coiling Security Counter Shutters
- B. Related Sections include the following:
 - 1. Division 05 Section "Metal Fabrications"
 - 2. Division 06 Section "Rough Carpentry"
 - 3. Division 08 Section "Finish Hardware" .
 - 4. Division 09 Section "Painting"

1.3 DEFINITIONS

- A. Operation Cycle: One complete cycle of a door begins with the door in the closed position. The door is then moved to the open position and back to the closed position.

1.4 SUBMITTALS

- A. Procedures: Furnish submittals in accordance with the general requirements specified.
- B. Shop Drawing: Furnish shop drawings for architect's approval. Include elevations, sections, and details indicating dimensions, materials, finishes, conditions for anchorage and support of each counter shutter.
- C. Product Literature: Submit manufacturer's technical literature describing the product to be used under this section.
- D. Maintenance and Operating Manuals: Furnish complete manuals describing the materials, devices and procedures to be followed in operating and maintaining all counter shutters under this section. Include manufacturer's brochures and parts lists describing the actual materials used in the product.

1.5 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with applicable requirements of the laws, codes, ordinances and regulations of federal, state and municipal authorities having jurisdiction.
- B. Manufacturer Requirements: Counter shutter manufacturer shall have been in the business of and have experience in manufacturing the type of product covered under this specification section as well as giving credible service for a minimum of five (5) years. Provide list of at least ten (10) completed projects which include the products covered under this section.

1.6 DELIVERY, STORAGE AND HANDLING

- A. General: Deliver and store materials in manufacturer's original packaging, labeled to show name, brand and type. Store materials in a protected dry location off the ground in accordance with manufacturer's instructions.

1.7 WARRANTY

- A. Counter Shutter Warranty: Furnish one (1) year written warranty signed by the manufacturer and installer agreeing to repair or replace work which has failed as a result of defects in materials or workmanship. Upon notification within the warranty period, such defects shall be repaired at no cost to the owner.

PART 2 - PRODUCTS

2.1 COILING SECURITY COUNTER SHUTTERS

- A. Manufacturer: Coiling security counter shutters shall be model CS3000-PP-G as manufactured by McKeon Door Company, Basis of Design, or approved equal

2.2 MATERIALS

- A. Curtain: Shall be assembled of interlocking galvanized steel slats, cold rolled. Slats shall have endlocks locking each end of alternate slats to act as a wearing surface, and maintain slat alignment. Curtain shall be 22 gauge minimum.
 - 1. Slats: Shall be of a cross section not less than 1¼" wide by ½" deep.
- B. Bottom Bar: Shall consist of a single steel angle not less than 1½" x 1½" formed to fit slats. Provide slide locks with hasps on both jambs to allow for locking.
- C. Guides: Each guide assembly shall be fabricated of a minimum 1/8" steel angles and channels formed to a box type configuration.

- D. Mounting Brackets: Fabricated of hot rolled 1/8" steel plate minimum, brackets shall be provided to house ends of the counterbalance barrel assembly.
- E. Hood: Shall be provided to entirely enclose curtain and counterbalance barrel assembly. Hood shall be fabricated 22 gauge galvanized steel and designed to match brackets. Top and bottom shall be bent and reinforced for stiffness.
- F. Counterbalance Assembly: Counter shutter shall be counterbalanced by means of adjustable steel helical torsion springs attached to shaft enclosed in pipe with required mounting blocks or rings for attachment of curtain. Grease sealed bearings or self-lubricating graphite bearings shall be attached to the spring barrel which shall be fabricated of hot formed structural quality carbon steel seamless pipe.
- G. Manual Operation: Counter shutter shall be designed so that it may be manually opened and closed. The counter shutter shall not require more than 35 pounds of operational force to move the shutter in either direction.
- H. Finish: After completion of fabrication, clean all metal surfaces to remove dirt and chemically treat to provide for paint adhesion. Slats are to receive a prime coat finish of .2 mils of epoxy primer and .8 mils of polyester paint.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces and field conditions to which this work is to be performed and notify architect if conditions of surfaces exist which are detrimental to proper installation and timely completion of work.
- B. Verify all dimensions taken at job site affecting the work. Notify the architect in any instance where dimensions vary.
- C. Coordinate and schedule work under this section with work of other sections so as not to delay job progress.

3.2 INSTALLATION

- A. Perform installation using only factory approved and certified representatives of the counter shutter manufacturer.
- B. Install counter shutter assemblies at locations shown in perfect alignment and elevation, plumb, level, straight and true.
- C. Adjust counter shutter installation to provide uniform clearances and smooth non-binding operation.

3.3 PROTECTION AND CLEANING

- A. Protect installed work using adequate and suitable means during and after installation until accepted by owner.
- B. Remove, repair or replace materials which have been damaged in any way.
- C. Clean surfaces of grime and dirt using acceptable and recommended means and methods.

END OF SECTION 08 33 00

SECTION 08 33 23 - OVERHEAD COILING DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following types of overhead coiling doors:
 - 1. Service doors.
- B. Related Sections include the following:
 - 1. Division 08 Section "Finish Hardware" for lock cylinders and keying.
 - 2. Division 09 Section "Painting" for field-applied paint finish.

1.3 DEFINITIONS

- A. Operation Cycle: One complete cycle of a door begins with the door in the closed position. The door is then moved to the open position and back to the closed position.

1.4 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide overhead coiling doors capable of withstanding the effects of gravity loads and the following loads and stresses without evidencing permanent deformation of door components:
 - 1. Wind Load: Uniform pressure (velocity pressure) of **20 lbf/sq. ft. (960 Pa)**, acting inward and outward.
- B. Operation-Cycle Requirements: Design overhead coiling door components and operator to operate for not less than 10,000 cycles.

1.5 SUBMITTALS

- A. Product Data: For each type and size of overhead coiling door and accessory. Include details of construction relative to materials, dimensions of individual components, profiles, and finishes.

Provide roughing-in diagrams, operating instructions, and maintenance information. Include the following:

1. Setting drawings, templates, and installation instructions for built-in or embedded anchor devices.
 2. Summary of forces and loads on walls and jambs.
 3. Fire-Rated Doors: Information describing fire-release system, including testing and resetting instructions.
- B. Shop Drawings: For special components and installations not dimensioned or detailed in manufacturer's data sheets.
1. Wiring Diagrams: Detail wiring for power, signal, and control systems. Differentiate between manufacturer-installed and field-installed wiring and between components provided by door manufacturer and those provided by others.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer who is an authorized representative of the overhead coiling door manufacturer for both installation and maintenance of units required for this Project.
- B. Source Limitations: Obtain overhead coiling doors through one source from a single manufacturer.
1. Obtain operators and controls from the overhead coiling door manufacturer.
- C. Fire-Rated Door Assemblies: Provide assemblies complying with NFPA 80 that are identical to door and frame assemblies tested for fire-test-response characteristics per UL 10b, and that are labeled and listed for fire ratings indicated by UL, FM, ITS/Warnock Hersey, or another testing and inspecting agency acceptable to authorities having jurisdiction.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Overhead Door Corporation, Model 625 Basis of Design
 2. Atlas Door Corp.; Div. of Clopay Building Products Co.
 3. Raynor Garage Doors.
 4. Wayne-Dalton Corp.

5. Windsor Door; A United Dominion Company.

2.2 DOOR CURTAIN MATERIALS AND CONSTRUCTION

- A. Door Curtain: Fabricate overhead coiling door curtain of interlocking slats, designed to withstand wind loading indicated, in a continuous length for width of door without splices. Unless otherwise indicated, provide slats of material thickness recommended by door manufacturer for performance, size, and type of door indicated, and as follows:
 1. Steel Door Curtain Slats: Structural-quality, cold-rolled galvanized steel sheets complying with **ASTM A 653, with G90 (ASTM A 653M, with Z275)** zinc coating.
 - a. Provide manufacturer's standard flat-profile slats C-187 or equal.
- B. Endlocks: Manufacturer's standard locks on not less than alternate curtain slats for curtain alignment and resistance against lateral movement.
- C. Windlocks: Malleable-iron castings secured to curtain slats with galvanized rivets or high-strength nylon, as required to comply with wind load.
- D. Bottom Bar: Manufacturer's standard continuous channel or tubular shape, either stainless-steel or aluminum extrusions to suit type of curtain slats.
 1. Astragal: Provide a replaceable, adjustable, continuous, compressible gasket of flexible vinyl, rubber, or neoprene, between angles or fitted to shape, as a cushion bumper for interior door.
- E. Curtain Jamb Guides: Fabricate curtain jamb guides of steel angles, or channels and angles, with sufficient depth and strength to retain curtain, to allow curtain to operate smoothly, and to withstand loading. Build up units with not less than **3/16-inch- (5-mm-)** thick, galvanized steel sections complying with **ASTM A 36 (ASTM A 36M)**, and ASTM A 123. Slot bolt holes for guide adjustment. Provide removable stops on guides to prevent overtravel of curtain and a continuous bar for holding windlocks.
- F. Provide automatic-closing device inoperative during normal door operations, with governor unit complying with requirements of NFPA 80, with easily tested and reset release mechanism, and designed to be activated by the following:
 1. Governor: Oscillating type.
 2. Temperature rise and melting point of 165 deg F (74 deg C) replaceable fusible links, interconnected and on both sides of wall of door opening.

2.3 HOODS AND ACCESSORIES

- A. Hood: Form to entirely enclose coiled curtain and operating mechanism at opening head and act as weatherseal. Contour to suit end brackets to which hood is attached. Roll and reinforce top and bottom edges for stiffness. Provide closed ends for surface-mounted hoods and fascia for any

portion of between-jamb mounting projecting beyond wall face. Provide intermediate support brackets as required to prevent sag.

1. Fabricate steel hoods, for steel doors, of not less than **0.028-inch (0.7-mm)** thick, hot-dip galvanized steel sheet with **G90 (Z275)** zinc coating, complying with **ASTM A 653 (ASTM A 653M)**.
- B. Push/Pull Handles: For push-up-operated or emergency-operated doors, provide galvanized steel lifting handles on each side of door.
 1. Provide pull-down straps or pole hooks for doors more than **84 inches (2130 mm)** high.
- C. Slide Bolt: Fabricate with side locking bolts to engage through slots in tracks for locking by padlock, located on both left and right jamb sides, operable from opposite coil side.
- D. Chain Lock Keeper: Suitable for padlock.

2.4 COUNTERBALANCING MECHANISM

- A. General: Counterbalance doors by means of adjustable-tension steel helical torsion spring, mounted around a steel shaft and contained in a spring barrel connected to door curtain with required barrel rings. Use grease-sealed bearings or self-lubricating graphite bearings for rotating members.
- B. Counterbalance Barrel: Fabricate spring barrel of hot-formed, structural-quality, welded or seamless carbon-steel pipe, of sufficient diameter and wall thickness to support rolled-up curtain without distortion of slats and to limit barrel deflection to not more than **0.03 in./ft. (2.5 mm/m)** of span under full load.
- C. Provide spring balance of one or more oil-tempered, heat-treated steel helical torsion springs. Size springs to counterbalance weight of curtain, with uniform adjustment accessible from outside barrel. Provide cast-steel barrel plugs to secure ends of springs to barrel and shaft.
- D. Fabricate torsion rod for counterbalance shaft of cold-rolled steel, sized to hold fixed spring ends and carry torsional load.
- E. Brackets: Provide mounting brackets of manufacturer's standard design, either cast-iron or cold-rolled steel plate with bell-mouth guide groove for curtain.

2.5 FINISHES, GENERAL

- A. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.6 STEEL AND GALVANIZED STEEL FINISHES

- A. Thermoset Finish: Apply manufacturer's standard baked finish consisting of primer and thermosetting topcoat according to coating manufacturer's written instructions for cleaning, pretreatment, application, thermosetting, and minimum dry film thickness.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Install door and operating equipment complete with necessary hardware, jamb and head mold strips, anchors, inserts, hangers, and equipment supports according to Shop Drawings, manufacturer's written instructions, and as specified.
 - 1. Install fire-rated doors to comply with NFPA 80.

3.2 ADJUSTING

- A. Lubricate bearings and sliding parts; adjust doors to operate easily, free from warp, twist, or distortion and fitting weathertight for entire perimeter.

END OF SECTION 08 33 23

SECTION 08 41 13 - ALUMINUM FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:

- 1. Doors Frames.

1.3 SYSTEM DESCRIPTION

- A. General: Provide aluminum frame systems capable of withstanding loads and thermal and structural movement requirements indicated without failure, based on testing manufacturer's standard units in assemblies similar to those indicated for this Project. Failure includes the following:

- 1. Air infiltration and water penetration exceeding specified limits.
- 2. Framing members transferring stresses, including those caused by thermal and structural movement, to glazing units.

- B. Structural Silicone-Sealant Joints: Provide systems with structural silicone-sealant joints complying with the following requirements:

- 1. Tensile or shear stress in joints is less than 20 psi (138 kPa).
- 2. Structural sealant withstands tensile and shear stresses imposed by storefront systems without failing adhesively or cohesively. When tested for adhesive compatibility with each substrate and condition required, provide sealant that fails cohesively before it fails adhesively. Adhesive and cohesive failure are defined as follows:
 - a. Adhesive failure occurs when sealant pulls away from a substrate cleanly, leaving no sealant material behind.
 - b. Cohesive failure occurs when sealant breaks or tears within a joint but does not separate from each substrate because sealant-to-substrate bond strength exceeds sealant's internal strength.

- C. Thermally Broken Construction: Provide systems that isolate aluminum exposed to exterior from aluminum exposed to interior with a material of low thermal conductance.

1.4 SUBMITTALS

- A. Product Data: For each product specified. Include details of construction relative to materials, dimensions of individual components, profiles, and finishes.

1.5 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of frame system through one source from a single manufacturer.

1.6 PROJECT CONDITIONS

- A. Field Measurements: Verify dimensions by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 - 1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating systems without field measurements. Coordinate construction to ensure actual dimensions correspond to established dimensions.

1.7 WARRANTY

- A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Kawneer Company, Inc, or approved equal.
 - 2. EFCO Corporation, or approved equal.
 - 3. Tubelite Architectural Systems, or approved equal.

2.2 MATERIALS

- A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated, complying with the requirements of standards indicated below.

1. Sheet and Plate: **ASTM B 209** (ASTM B 209M).
 2. Extruded Bars, Rods, Shapes, and Tubes: **ASTM B 221** (ASTM B 221M).
 3. Extruded Structural Pipe and Tubes: ASTM B 429.
 4. Bars, Rods, and Wire: **ASTM B 211** (ASTM B 211M).
 5. Welding Rods and Bare Electrodes: AWS A5.10.
- B. Steel Reinforcement: Complying with **ASTM A 36** (ASTM A 36M) for structural shapes, plates, and bars; ASTM A 611 for cold-rolled sheet and strip; or **ASTM A 570** (ASTM A 570M) for hot-rolled sheet and strip.
- C. Spacers, Setting Blocks, Gaskets, and Bond Breakers: Manufacturer's standard permanent, nonmigrating types in hardness recommended by manufacturer, compatible with sealants, and suitable for system performance requirements.
- D. Structural Silicone Sealant: Type recommended by sealant and system manufacturers that complies with ASTM C 1184 requirements, is compatible with system components with which it comes in contact, and is specifically formulated and tested for use as a structural sealant.
1. Color: As selected by Architect from manufacturer's full range of colors.
 2. Tensile Strength: **100 psi** (689.5 kPa) minimum.
 3. Provide sealant with modulus of elasticity that will not allow movement of more than 25 percent of joint width, unless less movement is required by structural-sealant-glazed systems' design.
 4. Use neutral-cure silicone sealant with insulating-glass units.
- E. Framing system gaskets, sealants, and joint fillers as recommended by manufacturer for joint type.
- F. Sealants and joint fillers for joints at perimeter of entrance and storefront systems as specified in Division 07 Section "Joint Sealants."
- G. Bituminous Paint: Cold-applied asphalt-mastic paint complying with SSPC-Paint 12 requirements, except containing no asbestos, formulated for **30-mil** (0.762-mm) thickness per coat.
- 2.3 ALUMINUM DOOR FRAMES
- A. Aluminum Door Frames: Fabricate tubular and channel frame assemblies, as indicated, with minimum wall thickness of 0.125", with welded or mechanical joints in accordance with manufacturer's standards; reinforce as necessary to support required loads.
 - B. Provide non removable door stops for single acting doors, either extruded integrally with door frame or applied with fasteners which are concealed when door is closed.

2.4 FABRICATION

- A. General: Fabricate components that, when assembled, will have accurately fitted joints with ends coped or mitered to produce hairline joints free of burrs and distortion. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.
 - 1. Fabricate components for screw-spline frame construction.
- B. Forming: Form shapes with sharp profiles, straight and free of defects or deformations, before finishing.
- C. Prepare components to receive concealed fasteners and anchor and connection devices.
- D. Fabricate components to drain water passing joints and condensation and moisture occurring or migrating within the system to the exterior.
- E. Welding: Weld components to comply with referenced AWS standard. Weld before finishing components to greatest extent possible. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.
- F. Metal Protection: Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
- G. Entrances: Fabricate door framing in profiles indicated. Reinforce as required to support imposed loads. Factory assemble door and frame units and factory install hardware to greatest extent possible. Reinforce door and frame units as required for installing hardware indicated. Cut, drill, and tap for factory-installed hardware before finishing components.

2.5 ALUMINUM FINISHES

- A. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations relative to applying and designating finishes.
- B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- C. Finish designations prefixed by AA conform to the system established by the Aluminum Association for designating aluminum finishes.
- D. High-Performance Organic Finish (2-Coat Fluoropolymer): AA-C12C40R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: conversion coating; Organic Coating: manufacturer's standard 2-coat, thermocured system consisting of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride)

resin by weight). Prepare, pre-treat, and apply coating to exposed metal surfaces to comply with AAMA 2604 and with coating and resin manufacturers' written instructions.

1. Color: To match Benjamin Moore 2107-20 mocha brown..

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of entrance and storefront systems. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Comply with manufacturer's written instructions for protecting, handling, and installing entrance and storefront systems. Do not install damaged components. Fit frame joints to produce hairline joints free of burrs and distortion. Rigidly secure nonmovement joints. Seal joints watertight.
- B. Metal Protection: Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
- C. Install components to drain water passing joints and condensation and moisture occurring or migrating within the system to the exterior.
- D. Set continuous sill members and flashing in a full sealant bed to provide weathertight construction, unless otherwise indicated. Comply with requirements of Division 7 Section "Joint Sealants."
- E. Install framing components plumb and true in alignment with established lines and grades without warp or rack of framing members.
- F. Install entrances plumb and true in alignment with established lines and grades without warp or rack. Lubricate operating hardware and other moving parts according to hardware manufacturers' written instructions.
 1. Install surface-mounted hardware according to manufacturer's written instructions using concealed fasteners to greatest extent possible.
- G. Install perimeter sealant to comply with requirements of Division 7 Section "Joint Sealants," unless otherwise indicated.

3.3 ADJUSTING AND CLEANING

- A. Adjust doors and hardware to provide tight fit at contact points and weather stripping, smooth operation, and weathertight closure.
- B. Remove excess sealant and glazing compounds, and dirt from surfaces.

3.4 PROTECTION

- A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure entrance and storefront systems are without damage or deterioration at the time of Substantial Completion.

END OF SECTION 08 41 13

SECTION 08 71 00 - DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY:

- A. Section Includes: Finish Hardware for door openings, except as otherwise specified herein shall be in accordance with the Contract Documents.
1. Door hardware for steel (hollow metal) doors.
 2. Door hardware for aluminum or FRP doors.
 3. Door hardware for wood doors.
 4. Door hardware for other doors indicated.
 5. Keyed cylinders as indicated.
- B. Related Sections:
1. Division 06: Rough Carpentry.
 2. Division 08: Aluminum Doors and Frames
 3. Division 08: Hollow Metal Doors and Frames.
 4. Division 08: Wood Doors.
- C. References: Comply with applicable requirements of the following standards. Where these standards conflict with other specific requirements, the most restrictive shall govern.
1. Builders Hardware Manufacturing Association (BHMA)
 2. NFPA 101 Life Safety Code
 3. NFPA 80 -Fire Doors and Windows
 4. ANSI-A156.xx- Various Performance Standards for Finish Hardware
 5. UL10C – Positive Pressure Fire Test of Door Assemblies
 6. ANSI-A117.1 – Accessible and Usable Buildings and Facilities
 7. DHI /ANSI A115.IG – Installation Guide for Doors and Hardware
 8. ICC – International Building Code
- D. Intent of Hardware Groups
1. Should items of hardware not definitely specified be required for completion of the Work, furnish such items of type and quality comparable to adjacent hardware and appropriate for service required.
 2. Where items of hardware aren't definitely or correctly specified, are required for completion of the Work, a written statement of such omission, error, or other discrepancy to be submitted to Architect, prior to date specified for receipt of bids for clarification by addendum; or, furnish such items in the type and quality established by this specification, and appropriate to the service intended.

1.2 SUBSTITUTIONS:

- A. Comply with Division 1.

1.3 SUBMITTALS:

- A. Comply with Division 01.
- B. Special Submittal Requirements: Combine submittals of this Section with Sections listed below to ensure the "design intent" of the system/assembly is understood and can be reviewed together.
- C. Product Data: Manufacturer's specifications and technical data including the following:
 - 1. Detailed specification of construction and fabrication.
 - 2. Manufacturer's installation instructions.
 - 3. Wiring diagrams for each electric product specified. Coordinate voltage with electrical before submitting.
 - 4. Submit 6 copies of catalog cuts with hardware schedule.
- D. Shop Drawings - Hardware Schedule: Submit 6 complete reproducible copy of detailed hardware schedule in a vertical format.
 - 1. List groups and suffixes in proper sequence.
 - 2. Completely describe door and list architectural door number.
 - 3. Manufacturer, product name, and catalog number.
 - 4. Function, type, and style.
 - 5. Size and finish of each item.
 - 6. Mounting heights.
 - 7. Explanation of abbreviations and symbols used within schedule.
 - 8. Detailed wiring diagrams, specially developed for each opening, indicating all electric hardware, security equipment and access control equipment, and door and frame rough-ins required for specific opening.
- E. Templates: Submit templates and "reviewed Hardware Schedule" to door and frame supplier and others as applicable to enable proper and accurate sizing and locations of cutouts and reinforcing.
 - 1. Templates, wiring diagrams and "reviewed Hardware Schedule" of electrical terms to electrical for coordination and verification of voltages and locations.
- F. Samples: (If requested by the Architect)
 - 1. 1 sample of Lever and Rose/Escutcheon design, (pair).
 - 2. 3 samples of metal finishes
- G. Keying Schedule: Prepared by or under the supervision of Architectural Hardware Consultant, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations.

H. Contract Closeout Submittals: Comply with Division 01 including specific requirements indicated.

1. Operating and maintenance manuals: Submit 3 sets containing the following.
 - a. Complete information in care, maintenance, and adjustment, and data on repair and replacement parts, and information on preservation of finishes.
 - b. Catalog pages for each product.
 - c. Name, address, and phone number of local representative for each manufacturer.
 - d. Parts list for each product.
2. Copy of final hardware schedule, edited to reflect, "As installed".
3. Copy of final keying schedule
4. As installed "Wiring Diagrams" for each piece of hardware connected to power, both low voltage and 110 volts.
5. One set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.

1.4 QUALITY ASSURANCE

A. Comply with Division 01.

1. Statement of qualification for distributor and installers.
2. Statement of compliance with regulatory requirements and single source responsibility.
3. Distributor's Qualifications: Firm with 3 years experience in the distribution of commercial hardware.
 - a. Distributor to employ full time Architectural Hardware Consultants (AHC) for the purpose of scheduling and coordinating hardware and establishing keying schedule.
 - b. Hardware Schedule shall be prepared and signed by an AHC.
4. Installer's Qualifications: Firm with 3 years experienced in installation of similar hardware to that required for this Project, including specific requirements indicated.
5. Regulatory Label Requirements: Provide testing agency label or stamp on hardware for labeled openings.
 - a. Provide UL listed hardware for labeled and 20 minute openings in conformance with requirements for class of opening scheduled.
 - b. Underwriters Laboratories requirements have precedence over this specification where conflict exists.
6. Single Source Responsibility: Except where specified in hardware schedule, furnish products of only one manufacturer for each type of hardware.

B. Review Project for extent of finish hardware required to complete the Work. Where there is a conflict between these Specifications and the existing hardware, notify the

Architect in writing and furnish hardware in compliance with the Specification unless otherwise directed in writing by the Architect.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Tag each item or package separately with identification related to final hardware schedule, and include basic installation instructions with each item or package.
- B. Packaging of door hardware is responsibility of supplier. As material is received by hardware supplier from various manufacturers, sort and repackage in containers clearly marked with appropriate hardware set number to match set numbers of approved hardware schedule. Two or more identical sets may be packed in same container.
- C. Inventory door hardware jointly with representatives of hardware supplier and hardware installer until each is satisfied that count is correct.
- D. Deliver individually packaged door hardware items promptly to place of installation (shop or Project site).
- E. Provide secure lock-up for door hardware delivered to the Project, but not yet installed. Control handling and installation of hardware items that are not immediately replaceable so that completion of the Work will not be delayed by hardware losses both before and after installation.

1.6 PROJECT CONDITIONS:

- A. Coordinate hardware with other work. Furnish hardware items of proper design for use on doors and frames of the thickness, profile, swing, security and similar requirements indicated, as necessary for the proper installation and function, regardless of omissions or conflicts in the information on the Contract Documents.
- B. Review Shop Drawings for doors and entrances to confirm that adequate provisions will be made for the proper installation of hardware.

1.7 WARRANTY:

- A. Refer to Conditions of the Contract
- B. Special Manufacturer's Warranty:
 - 1. Closers: Thirty years
 - 2. Exit Devices: Five Years
 - 3. Locksets & Cylinders: Ten years
 - 4. All other Hardware: Two years.

1.8 OWNER'S INSTRUCTION:

- A. Instruct Owner's personnel in operation and maintenance of hardware units.

1.9 MAINTENANCE:

- A. Extra Service Materials: Deliver to Owner extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Division 01 Closeout Submittals Section.
 - 1. Special Tools: Provide special wrenches and tools applicable to each different or special hardware component.
 - 2. Maintenance Tools: Provide maintenance tools and accessories supplied by hardware component manufacturer.
 - 3. Delivery, Storage and Protection: Comply with Owner's requirements for delivery, storage and protection of extra service materials.
- B. Maintenance Service: Submit for Owner's consideration maintenance service agreement for electronic products installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

- A. The following manufacturers are approved subject to compliance with requirements of the Contract Documents. Approval of manufacturers other than those listed shall be in accordance with Division 01.

<u>Item:</u>	<u>Manufacturer:</u>
Hinges	Ives
Continuous Hinges & Overhead Stops	ABH
Grade I Locksets, Cylinders	Schlage
Electronic Locks & Peripheral Equipment	Schlage Electronics
Door Closers	LCN
Push Pull Plates	Ives
Protection Plates	Ives
Door Stops	Ives
Flush Bolts	Ives
Thresholds & Gasketing	Reese
Key Cabinet	Telkee

2.2 MATERIALS:

- A. Hinges: Shall be Ball bearing hinges
 - 1. Template screw hole locations
 - 2. Bearings are to be fully hardened.
 - 3. Equip with easily seated, non-rising pins.
 - 4. Non Removable Pin screws shall be slotted stainless steel screws.
 - 5. Bearing assembly is to be installed after plating.
 - 6. Sufficient size to allow 180-degree swing of door
 - 7. Provide hinge type as listed in schedule.

8. Furnish 3 hinges per leaf to 7 foot 6 inch height. Add one for each additional 30 inches in height or fraction thereof.
9. Tested and approved by BHMA for all applicable ANSI Standards for type, size, function and finish
10. UL10C listed for Fire rated doors.

B. Pin and Barrel Continuous Hinges:

1. Certified by BHMA for ANSI A156.26, Grade 1
2. Fabricated from 14 gauge material
3. UL and ULC listed for fire-rated 4' x 8' single doors and 8' x 8' pairs up to 3 hour.
4. Slim barrel design
5. Twin nylon self lubricating bearings located between all knuckles except top and bottom.
6. Two stainless steel bearings top and bottom, to prevent sagging if nylon bearings degrade during a fire.
7. Limited Lifetime warranty

C. Mortise Type Locks and Latchsets:

1. Tested and approved by BHMA for ANSI A156.13, Series 1000, Operational and Security Grade 1, Extra-Heavy Duty, and be UL10C listed.
2. 3/4 inch throw latchbolt
3. Provide sufficient curved strike lip to protect door trim
4. Functions and design as indicated in the hardware groups.

D. Cylindrical Type Locks and Latchsets:

1. Tested and approved by BHMA for ANSI A156.2, to three times the ANSI Requirement Series 4000, Grade 1, Extra-Heavy Duty, and be UL listed.
2. Fit modified ANSI A115.2 door preparation.
3. Locksets to have anti-rotational studs that are thru-bolted
4. Keyed lever shall not have exposed "keeper" hole
5. Each lever to have independent spring mechanism controlling it
6. 2-3/4 inch (70 mm) backset
7. 1/2 inch throw latchbolt
8. Provide sufficient curved strike lip to protect door trim
9. Functions and design as indicated in the hardware groups.

E. Exit Devices shall:

1. Tested and approved by BHMA for ANSI 156.3, Grade 1
2. Furnish UL or recognized independent laboratory certified mechanical operational testing.
3. Provide a deadlocking latchbolt
4. Non-fire rated exit devices shall have cylinder dogging.
5. Lever design shall match lockset lever design
6. Provide strikes as required by application.

7. Fire exit devices to be listed for UL10C
 8. UL listed for Accident Hazard
 9. Shall consist of a push pad, the actuating portion of which extends across, shall not be less than one half the width of the door leaf.
- F. Cylinders:
1. Provide the necessary cylinder housings, collars, rings & springs as recommended by the manufacturer for proper installation.
 2. Provide the proper cylinder cams or tail piece as required to operate all locksets and other keyed hardware items listed in the hardware sets.
 3. Coordinate and provide as required for related sections.
- G. Door Closers shall:
1. Tested and approved by BHMA for ANSI 156.4, Grade 1
 2. UL10C certified
 3. Conform to ANSI 156.4
 4. Metal covers
 5. Separate adjusting valves for closing and latching speed, and back check
 6. Provide adapter plates, shim spacers and blade stop spacers as required by frame and door conditions
 7. Full rack and pinion type closer
 8. Mount closers **on non-public side of door**, unless otherwise noted in specification
 9. Closers shall be non-handed, non-sized and multi-sized.
- H. Door Stops: Provide a dome floor or wall stop for every opening as listed in the hardware sets.
1. Wall stop and floor stop shall be wrought bronze, brass or stainless steel.
 2. Provide fastener suitable for wall construction.
 3. Coordinate reinforcement of walls where wall stop is specified.
 4. Provide dome stops where wall stops are not practical. Provide spacers or carpet riser for floor conditions encountered
- I. Over Head Stops: Provide a Surface mounted or concealed overhead when a floor or wall stop cannot be used or when listed in the hardware set.
1. Surface overhead stops shall be heavy duty bronze or stainless steel.
- J. Push Plates: Provide with four beveled edges ANSI J301, .050 thickness, size as indicated in hardware set. Furnish oval-head countersunk screws to match finish.
- K. Pulls with plates: Provide with four beveled edges ANSI J301, .050 thickness Plate s with ANSI J401 Pull as listed in hardware set. Provide proper fasteners for door construction.
- L. Kick plates: Provide with four beveled edges ANSI J102, 16 inches high by width less 2 inches on single doors and 1 inch on pairs of doors. Furnish oval-head countersunk screws to match finish.

- M. Door Bolts: Flush bolts for wood or metal doors.
 - 1. Provide a set of Automatic bolts, Certified ANSI/BHMA 156.3 Type 25 for hollow metal label doors.
 - 2. Provide a set of Automatic bolts, Certified ANSI/BHMA 156.3 Type 27 at wood label doors.
 - 3. Manual flush bolts, Certified ANSI/BHMA 156.16 at openings where allowed local authority.
 - 4. Provide Dust Proof Strike, Certified ANSI/BHMA 156.16 at doors with flush bolts without thresholds.

- N. Seals: All seals shall be finished to match adjacent frame color. Seals shall be furnished as listed in schedule. Material shall be UL listed for labeled openings.

- O. Weather stripping: Provide at head and jambs only those units where resilient or flexible seal strip is easily replaceable. Where bar-type weather strip is used with parallel arm mounted closers install weather strip first.
 - 1. Weather strip shall be resilient seal of (Neoprene, Polyurethane, Vinyl, Pile, Nylon Brush, Silicone)
 - 2. UL10C Positive Pressure rated seal set when required.

- P. Door Bottoms/Sweeps: Surface mounted or concealed door bottom where listed in the hardware sets.
 - 1. Door seal shall be resilient seal of (Neoprene, Polyurethane, Nylon Brush, Silicone)
 - 2. UL10C Positive Pressure rated seal set when required.

- Q. Thresholds: Thresholds shall be aluminum beveled type with maximum height of ½” for conformance with ADA requirements. Furnish as specified and per details. Provide fasteners and screws suitable for floor conditions.

- R. Provide one wall mounted Telkee, series key cabinet complete with hooks, index and tags to accommodate 50% expansion. Coordinate mounting location with architect.

- S. Silencers: Furnish silencers on all interior frames, 3 for single doors, 2 for pairs. Omit where any type of seals occur.

2.3 FINISH:

- A. Designations used in Schedule of Finish Hardware - 3.5, and elsewhere to indicate hardware finishes are those listed in ANSI/BHMA A156.18 including coordination with traditional U.S. finishes shown by certain manufacturers for their products

- B. Powder coat door closers to match other hardware, unless otherwise noted.

- C. Aluminum items shall be finished to match predominant adjacent material. Seals to coordinate with frame color.

2.4 KEYS AND KEYING:

- A. Provide all cylinders as Construction Master Keyed with All Brass Cores during the construction period. Permanent keys (prepared according to the accepted keying schedule) will be furnished to the Owner.
- B. Cylinders: Coordinate new keying requirements with requirements of Owner standard Schlage FSIC Primus XP 6 pin key system
- C. Transmit Masterkeys and other Security keys to hardware supplier.
- D. Furnish keys in the following quantities:
 - 1. 3 each Masterkeys
 - 2. 3 each Change keys each keyed core
 - 3. 3 each Construction masterkeys
 - 4. 100 Key blanks
- E. Provide complete key control system, including key cabinet and software by TelKee, with capacity to store 150% of keys furnished
- F. Final keying requirements are to be determined by the Owner

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of conditions: Examine doors, frames, related items and conditions under which Work is to be performed and identify conditions detrimental to proper and or timely completion.
 - 1. Do not proceed until unsatisfactory conditions have been corrected.

3.2 HARDWARE LOCATIONS:

- A. Mount hardware units at heights indicated in the following publications except as specifically indicated or required to comply with the governing regulations.
 - 1. Recommended Locations for Builder's Hardware for Standard Steel Doors and Frames, by the Door and Hardware Institute (DHI).
 - 2. Recommended locations for Architectural Hardware for flush wood doors (DHI).
 - 3. WDMA Industry Standard I.S.-1A-04, Industry Standard for Architectural wood flush doors.

3.3 INSTALLATION:

- A. Install each hardware item per manufacturer's instructions and recommendations. Do not install surface mounted items until finishes have been completed on the substrate. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- B. Conform to local governing agency security ordinance.
- C. Install Conforming to ICC/ANSI A117.1 Accessible and Usable Building and Facilities.
 - 1. Adjust door closer sweep periods so that from the open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the landing side of the door.
- D. Installed hardware using the manufacturers fasteners provided. Drill and tap all screw holes located in metallic materials. Do not use "Riv-Nuts" or similar products.

3.4 FIELD QUALITY CONTROL AND FINAL ADJUSTMENT

- A. Contractor/Installers, Field Services: After installation is complete, contractor shall inspect the completed door openings on site to verify installation of hardware is complete and properly adjusted, in accordance with both the Contract Documents and final shop drawings.
 - 1. Check and adjust closers to ensure proper operation.
 - 2. Check latchset, lockset, and exit devices are properly installed and adjusted to ensure proper operation.
 - a. Verify levers are free from binding.
 - b. Ensure latchbolts and dead bolts are engaged into strike and hardware is functioning.
 - 3. Report findings, in writing, to architect indicating that all hardware is installed and functioning properly. Include recommendations outlining corrective actions for improperly functioning hardware if required.

3.5.1 SCHEDULE OF FINISH HARDWARE:

Manufacturer List

<u>Code</u>	<u>Name</u>
AB	ABH
BY	By Others
GJ	Glynn Johnson
IV	Ives
LC	LCN
RS	Reese Enterprises Inc.
SC	Schlage
TE	Telkee

Finish List

<u>Code</u>	<u>Description</u>
626	Satin Chromium Plated
628	Satin Aluminum, Clear Anodized
630	Satin Stainless Steel
652	Satin Chromium Plated
689	Aluminum Painted
GR	Grey
US28	Aluminum - Clear Anodized
US26D	Chromium Plated, Dull
US32D	Stainless Steel, Dull

Option List

<u>Code</u>	<u>Description</u>
PT	Power Transfer Prep
B4E	Beveled 4 Edges
NRP	NON Removable Pin Hinge
CSK	Counter Sunk Screws

Hardware Sets

SET #1 Doors 1, 2, 3, 3A, 5, 5A

1 Continuous Hinge	A500	630	AB
1 Electronic Lock	AD200-MD-40-MTK-RHO-TD-XP-4B	626	SC
1 Core	20-740-XP	626	SC
1 Closer	4040XP SCUSH-SRI	689	LC
1 Kick Plate	8400-10"-B-CS-2"LDW	630	IV
1 Lock Guard	LG12	630	IV
1 Weather Strip	775A @ Head and Jambs	AL	RS
1 Extended Rain Drip	R201A	AL	RS
1 Sweep	354A	AL	RS
1 Threshold	S483A	AL	RS

Note: Lock is locked or unlocked by timer. See Hardware Set 7 for Head End Equipment.

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SET #2 Door 6, 7

2 Continuous Hinge	A500	630	AB
1 Pair Flush Bolts	FB458	626	IV
1 Dust Proof Strike	DP2	626	IV
1 Lockset	ND96-TD-RHO	626	SC
1 Core	20-740-XP	626	SC
2 Closer	4040XP S-CUSH-SRI	689	LC
2 Kick Plate	8400-10"-B-CS-2"LDW	630	IV
1 Lock Guard	LG12 Doors	630	IV
1 Weather Strip	775A @ Head and Jambs	AL	RS
1 Extended Rain Drip	R201A	AL	RS
2 Sweep	354A	AL	RS
1 Threshold	S483A	AL	RS

SET #3 Door 11

1 Continuous Hinge	A500	630	AB
1 Passage Set	ND10S-RHO	626	SC
1 Mop Plate	8400-4"-B-CS-2"LDW	630	IV
1 Overhead Stop	4424-AJB	626	AB
3 Silencers	SR64	GR	IV

SET #4 Door 25

1 Continuous Hinge	A500	630	AB
1 Passage Set	ND10S-RHO	626	SC
1 Overhead Stop	4424	630	AB
3 Silencers	SR64	GR	IV

SET #5 Doors 23, 24, 27

1 Continuous Hinge	A500	630	AB
1 Lockset	ND94-TD-RHO	626	SC
1 Core	20-740-XP	626	SC
1 Closer	4040XP S-CUSH-SRI	689	LC
1 Kick Plate	8400-10"-B-CS-2"LDW	630	IV
1 Lock Guard	LG12	630	IV
1 Weather Strip	775A @ Head and Jambs	AL	RS
1 Extended Rain Drip	R201A	AL	RS
1 Sweep	354A	AL	RS
1 Threshold	S483A	AL	RS

SET #6 Door 4, 4A, 26

1 Cylinder	As Required by Door Manufacturer
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SET #7

1 SMS Express Software	SXPR-SFT-1	SC
1 HHD-KIT-USB		SC
1 Software Installation By Phone	SCH-EXP-INST	SC

SET #8

1 Key Cabinet	RWC125S	TE
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END OF SECTION 08 71 00

SECTION 09 21 16 - GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Non-load-bearing steel framing members for gypsum board assemblies.

1.3 REFERENCES

- A. GA-216, "Application and Finishing of Gypsum Board."
- B. GA-214, "Levels of Gypsum Board Finish."

1.4 DEFINITIONS

- A. Gypsum Board Construction Terminology: Refer to ASTM C 11 and GA-505 for definitions of terms related to gypsum board assemblies not defined in this Section or in other referenced standards.

1.5 SUBMITTALS

- A. General: Submit the following according to Conditions of the Contract and Division 1 Specification Sections.
- B. Product data for each type of product specified.

1.6 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: Where fire-rated gypsum board assemblies are indicated, provide materials and construction identical to those of assemblies tested for fire resistance per ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.

1. Fire Resistance Ratings: As indicated by reference to GA File Numbers in GA-600 "Fire Resistance Design Manual" or to design designations in UL "Fire Resistance Directory" or in the listing of another testing and inspecting agency acceptable to authorities having jurisdiction.
 - B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.
 - C. Single-Source Responsibility for Steel Framing: Obtain steel framing members for gypsum board assemblies from a single manufacturer.
 - D. Single-Source Responsibility for Panel Products: Obtain each type of gypsum board and other panel products from a single manufacturer.
 - E. Single-Source Responsibility for Finishing Materials: Obtain finishing materials from either the same manufacturer that supplies gypsum board and other panel products or from a manufacturer acceptable to gypsum board manufacturer.
- 1.7 DELIVERY, STORAGE, AND HANDLING
- A. Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer or supplier.
 - B. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes. Neatly stack gypsum panels flat to prevent sagging.
 - C. Handle gypsum board to prevent damage to edges, ends, and surfaces. Do not bend or otherwise damage metal corner beads and trim.
- 1.8 PROJECT CONDITIONS
- A. Environmental Conditions, General: Establish and maintain environmental conditions for applying and finishing gypsum board to comply with ASTM C 840 and with gypsum board manufacturer's recommendations.
 - B. Room Temperatures: For nonadhesive attachment of gypsum board to framing, maintain not less than 40 deg F (4 deg C). For adhesive attachment and finishing of gypsum board, maintain not less than 50 deg F (10 deg C) for 48 hours prior to application and continuously after until dry. Do not exceed 95 deg F (35 deg C) when using temporary heat sources.
 - C. Ventilation: Ventilate building spaces, as required, for drying joint treatment materials. Avoid drafts during hot dry weather to prevent finishing materials from drying too rapidly.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
1. Steel Framing and Furring:
 - a. Clark Steel Framing.
 - b. Consolidated Systems, Inc.
 - c. Dale Industries, Inc.
 - d. Dietrich Industries, Inc.
 - e. Marino Industries Corp.
 - f. Gold Bond Building Products Div., National Gypsum Co.
 - g. Unimast Inc.
 2. Gypsum Board and Related Products:
 - a. Georgia-Pacific Corp.
 - b. Gold Bond Building Products Div., National Gypsum Co.
 - c. United States Gypsum Co.

2.2 STEEL FRAMING FOR WALLS AND PARTITIONS

- A. General: Provide steel framing members complying with the following requirements:
1. Component Sizes and Spacings: As indicated but not less than that required to comply with ASTM C 754 under the following maximum deflection and lateral loading conditions:
 - a. Maximum Deflection: L/120 at 10 lbf per sq. ft.
 2. Protective Coating: Manufacturers standard galvanized coating.
- B. Steel Studs and Runners: ASTM C 645, with flange edges of studs bent back 90 deg and doubled over to form 3/16-inch-wide minimum lip (return) and complying with the following requirements for minimum thickness of base (uncoated) metal and for depth:
1. Depth: 3-5/8 inches, unless otherwise indicated.
 2. Studs ASTM C 645, 18 gauge unless otherwise indicated.
 3. Runners: Match studs; type recommended by stud manufacturer for floor and ceiling support of studs, and for vertical abutment of drywall work at other work.
- C. Steel Rigid Furring Channels: ASTM C 645, hat-shaped, depth and minimum thickness of base (uncoated) metal as follows:
1. Depth: 7/8 inch.

2. Thickness: 0.0179 inch, unless otherwise indicated.

- D. Fasteners for Metal Framing: Provide fasteners of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel framing and furring members securely to substrates involved; complying with the recommendations of gypsum board manufacturers for applications indicated.

2.3 GYPSUM BOARD PRODUCTS

- A. General: Provide gypsum board of types indicated in maximum lengths available to minimize end-to-end butt joints.

- B. Gypsum Wallboard: Complying with ASTM C 36/C or ASTM C 1396/C , as applicable to type of gypsum board indicated (whichever is more stringent) and as follows:

1. Type: Regular for vertical surfaces, unless otherwise indicated.
2. Type: Type X where required for fire-resistive-rated assemblies.
3. Thickness: 5/8 inch unless otherwise indicated.
4. Products: Subject to compliance with requirements, provide one of the following products where proprietary gypsum wallboard is indicated:
 - a. Gyprock Fireguard C Gypsum Board, Domtar Gypsum.
 - b. Firestop Type C, Georgia-Pacific Corp.
 - c. Fire-Shield C, Gold Bond Building Products Div., National Gypsum Co.
 - d. SHEETROCK Brand Gypsum Panels, FIRECODE C Core, United States Gypsum Co.
 - e. SHEETROCK Brand Gypsum Panels, ULTRACODE Core, United States Gypsum Co.

- C. Water-Resistant Gypsum Backing Board: ASTM C 630/C or ASTM C 1396/C and as follows:

1. Type: Regular, unless otherwise indicated.
2. Type: Type X where required for fire-resistance-rated assemblies and where indicated.
3. Thickness: 5/8 inch (15.9 mm), unless otherwise indicated.

2.4 TRIM ACCESSORIES

- A. Accessories for Interior Installation: Corner beads, edge trim, and control joints complying with ASTM C 1047 and requirements indicated below:

1. Material: Formed metal, plastic, or metal combined with paper, with metal complying with the following requirement:
 - a. Sheet steel zinc-coated by hot-dip process.

2. Shapes:
 - a. Cornerbead.
 - b. LC-Bead: J-shaped; exposed long flange receives joint compound.
 - c. U-Bead: J-shaped; exposed short flange does not receive joint compound.
 - d. Expansion (control) joint.

2.5 JOINT TREATMENT MATERIALS

- A. General: Provide joint treatment materials complying with ASTM C 475 and the recommendations of both the manufacturers of sheet products and of joint treatment materials for each application indicated.
- B. Joint Tape for Gypsum Board: Paper reinforcing tape, unless otherwise indicated.
 1. Use pressure-sensitive or staple-attached open-weave glass-fiber reinforcing tape with compatible joint compound where recommended by manufacturer of gypsum board and joint treatment materials for application indicated.
- C. Setting-Type Joint Compounds for Gypsum Board: Factory-packaged, job-mixed, chemical-hardening powder products formulated for uses indicated.

2.6 MISCELLANEOUS MATERIALS

- A. General: Provide auxiliary materials for gypsum board construction that comply with referenced standards and recommendations of gypsum board manufacturer.
- B. Steel drill screws complying with ASTM C 954 for fastening gypsum board to steel members from 0.033 to 0.112 inch thick.
- C. Sound Attenuation Blankets: ASTM-C-665-84, Type I semi-rigid unfaced mineral fiber blanket, Class 25 flame spread, 3" thickness or as indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates to which gypsum board assemblies attach or abut, installed hollow metal frames, cast-in-anchors, and structural framing with Installer present for compliance with requirements for installation tolerances and other conditions affecting performance of assemblies specified in this Section. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Suspended Assemblies: Coordinate installation of suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive hangers at spacing required to support the Work and that hangers will develop their full strength.
 - 1. Furnish concrete inserts and other devices indicated to other trades for installation in advance of time needed for coordination and construction.
- B. Coordination with Sprayed Fire-Resistive Materials:
 - 1. Before sprayed fire-resistive materials are applied, attach offset anchor plates or ceiling runners (tracks) to surfaces indicated to receive sprayed fire-resistive materials. Where offset anchor plates are required, provide continuous plates fastened to building structure not more than 24 inches (610 mm) o.c.
 - 2. After sprayed fire-resistive materials are applied, remove them only to extent necessary for installation of non-load-bearing steel framing. Do not reduce thickness of fire-resistive materials below that required for fire-resistance ratings indicated. Protect adjacent fire-resistive materials from damage.

3.3 INSTALLING STEEL FRAMING, GENERAL

- A. Steel Framing Installation Standard: Install steel framing to comply with ASTM C 754 and with ASTM C 840 requirements that apply to framing installation.
- B. Install supplementary framing, blocking, and bracing at terminations in gypsum board assemblies to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction. Comply with details indicated and with recommendations of gypsum board manufacturer or, if none available, with "Gypsum Construction Handbook" published by United States Gypsum Co.
- C. Isolate steel framing from building structure at locations indicated to prevent transfer of loading imposed by structural movement. Comply with details shown on Drawings.
 - 1. Where building structure abuts ceiling perimeter or penetrates ceiling.
 - 2. Where partition framing and wall furring abut structure except at floor.
 - a. Provide slip- or cushioned-type joints as detailed to attain lateral support and avoid axial loading.
- D. Do not bridge building expansion and control joints with steel framing or furring members. Independently frame both sides of joints with framing or furring members as indicated

3.4 INSTALLING STEEL FRAMING FOR WALLS AND PARTITIONS

- A. Install runners (tracks) at floors, ceilings, and structural walls and columns where gypsum board stud assemblies abut other construction.
 - 1. Where studs are installed directly against exterior walls, install asphalt felt strips between studs and wall.
- B. Installation Tolerances: Install each steel framing and furring member so that fastening surfaces do not vary more than 1/8 inch from the plane formed by the faces of adjacent framing.
- C. Extend partition framing full height to structural supports or substrates above suspended ceilings, except where partitions are indicated to terminate at suspended ceilings. Continue framing over frames for doors and openings and frame around ducts penetrating partitions above ceiling to provide support for gypsum board.
- D. Install steel studs and furring in sizes and at spacings indicated but not less than that required by the referenced steel framing installation standard to comply with maximum deflection and minimum loading requirements specified:
 - 1. Single-Layer Construction: Space studs at 16 inches o.c., unless otherwise indicated.
- E. Install steel studs so that flanges point in the same direction and so that leading edges or ends of each gypsum board can be attached to open (unsupported) edges of stud flanges first.
- F. Frame door openings to comply with details indicated, with GA-219, and with applicable published recommendations of gypsum board manufacturer. Attach vertical studs at jambs with screws either directly to frames or to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.
 - 1. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install runner track section (for cripple studs) at head and secure to jamb studs.
 - a. Install two studs at each jamb unless otherwise indicated.
 - b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch (13-mm) clearance from jamb stud to allow for installation of control joint in finished assembly.
 - c. Extend vertical jamb studs through suspended ceilings and attach to underside of floor or roof structure above.
 - 2. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.

3.5 APPLYING AND FINISHING GYPSUM BOARD, GENERAL

- A. Gypsum Board Application and Finishing Standards: Install and finish gypsum panels to comply with ASTM C 840 and GA-216.

- B. Install wall/partition board panels to minimize the number of abutting end joints or avoid them entirely. Stagger abutting end joints not less than one framing member in alternate courses of board. At stairwells and other high walls, install panels horizontally with end abutting joints over studs and staggered.
- C. Install gypsum panels with face side out. Do not install imperfect, damaged, or damp panels. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.
- D. Locate both edge or end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Position adjoining panels so that tapered edges abut tapered edges, and field-cut edges abut field-cut edges and ends. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions. Avoid joints at corners of framed openings where possible.
- E. Attach gypsum panels to steel studs so that the leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
- F. Attach gypsum panels to framing provided at openings and cutouts.
- G. Form control joints and expansion joints at locations indicated and as detailed, with space between edges of adjoining gypsum panels, as well as supporting framing behind gypsum panels.
- H. Isolate perimeter of non-load-bearing gypsum board partitions at structural abutments, except floors, as detailed. Provide 1/4-inch-to-1/2-inch-wide spaces at these locations and trim edges with U-bead edge trim where edges of gypsum panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- I. Floating Construction: Where feasible, including where recommended by manufacturer, install gypsum panels over wood framing, with floating internal corner construction.
- J. Space fasteners in gypsum panels according to referenced gypsum board application and finishing standard and manufacturer's recommendations.
- K. Install sound attenuation blankets at all partitions prior to gypsum board unless readily installed after board has been installed.

3.6 GYPSUM BOARD APPLICATION METHODS

- A. Single-Layer Application: Install gypsum wallboard panels as follows:
 - 1. On partitions/walls, apply gypsum panels horizontally (perpendicular to framing), unless parallel application is required for fire-resistive-rated assemblies. Use maximum-length panels to minimize end joints.
 - 2. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.

- B. Single-Layer Fastening Methods: Apply gypsum panels to supports as follows:

- 1. Fasten with screws.

3.7 INSTALLING TRIM ACCESSORIES

- A. General: For trim accessories with back flanges, fasten to framing with the same fasteners used to fasten gypsum board. Otherwise, fasten trim accessories according to accessory manufacturer's directions for type, length, and spacing of fasteners.
- B. Install corner beads at external corners.
- C. Install edge trim where edge of gypsum panels would otherwise be exposed or semiexposed. Provide edge trim type with face flange formed to receive joint compound except where other types are indicated.
 - 1. Install U-bead where indicated.
- D. Install control joints at locations indicated, and where not indicated according to ASTM C 840, and in locations approved by the Architect for visual effect.

3.8 FINISHING GYPSUM BOARD ASSEMBLIES

- A. General: Apply joint treatment at gypsum board joints (both directions); flanges of corner bead, edge trim, and control joints; penetrations; fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration and levels of gypsum board finish indicated.
- B. Prefill open joints, rounded or beveled edges, and damaged areas using setting-type joint compound.
- C. Apply joint tape over gypsum board joints except those with trim accessories having concealed face flanges not requiring taping to prevent cracks from developing in joint treatment at flange edges.
- D. Apply joint tape over gypsum board joints and to trim accessories with concealed face flanges as recommended by trim accessory manufacturer and as required to prevent cracks from developing in joint compound at flange edges.
- E. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
 - 1. Level 4: At panel surfaces that will be exposed to view, unless otherwise indicated.
 - a. Primer and its application to surfaces are specified in other Division 9 Sections.

3.9 CLEANING AND PROTECTION

- A. Promptly remove any residual joint compound from adjacent surfaces.

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- B. Provide final protection and maintain conditions, in a manner suitable to Installer, that ensures gypsum board assemblies remain without damage or deterioration at time of Substantial Completion.

END OF SECTION 09 21 16

SECTION 09 70 00 - RESINOUS FLOORING (ACRYLICON)

PART 1 - PART 1 – GENERAL

1.1 SUMMARY

A. Performance Requirements:

- (i) Provide seamless flooring system which has been manufactured and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.
- (ii) The finished floor must be free of “pinholes” and surface defects which may compromise hygiene or cleaning requirements.
- (iii) It must not be possible to separate the individual layers which make up the system.
- (iv) Certified Applicator only system

B. Resin Properties:

- (i) The system is to be based on solvent-free 100% reactive resin.
- (ii) The system must have the following properties

C. Properties of the cured system:

Values:

Must be **fully cured in two hours** and reach a minimum compressive of 10,800 psi
Tensile strength 3,700 psi
Fully cured in two hours, ready for use

1.2 CONCRETE BASE

- (i) Cast in place concrete floor must be a minimum of 3800 PSI.
- (ii) Floor pitching must be designated on the drawings for the concrete base.
- (iii) An adequate membrane vapor barrier must be installed under the concrete.

1.3 SUBMITTALS

- A. Letter of verification of installer’s qualifications and acceptance from the manufacturer of the products.
- B. Two, 4”x 3.5” samples of proposed system to be used as standard for color mix and surface finish to be provided by awarded Certified Contractor.

1.4 QUALITY ASSURANCE

A. Installer Qualifications:

- (i) Installer must be a certified Acrylicon installer. (**Certified applicator only system**)
- (ii) The manufacturer of the specified products shall provide written approval of the installer to the General Contractor, Owner, or Construction Manager prior to beginning work.

B. Pre Contract Meeting:

Conduct pre contract meeting to confirm project requirements, substrate conditions, manufacturer's specification and warranty requirements.

C. Pre Installation Bond Testing:

Conduct bond test for surface preparation evaluation prior to application of coating system.

- (i) Manufacturer's representative shall perform and document the bond testing.
- (ii) Perform two tests minimum or one bond test per 2000 square feet of floor area or one in each location where the concrete is clearly seen to be a different pour/batch or color.
- (iii) Document bond test by locating bond test on drawings and identifying actual bond test specimen to location on drawings.
- (iv) Maintain test specimens at project office until completion of work.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Ordering: Comply with manufacturers ordering instructions and lead time requirements to avoid construction delays.
- B. Delivery: Deliver materials in manufacturers original, unopened, undamaged containers with identification labels intact.
- C. Storage and Protection: Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer. **Temperatures in storage area can not exceed 75 degrees F.**

1.6 PROJECT/SITE CONDITIONS

- A. Proper moisture tests need to be performed. Normal limits for moisture vapor transmission for AcryliCon floors are 5-lbs./1,000 sq. ft./24 hour using the calcium chloride test per ASTM F-1869 & 80% relative humidity using in-situ Relative Humidity Testing per ASTM F-2170.
- B. Concrete floor to be a steel trowel finish.
- C. All roofing penetrations, openings and parapet areas to be sealed water tight by others prior to installation of the AcryliCon floor.
- D. Finished electric lighting must be installed prior to application of the AcryliCon flooring.
- E. Loading dock, if applicable, must be concreted or compacted stone, functional with dock leveling platform, cleared and empty for the installation contractor's use.
- F. If applicable, door jam juncture to cove base, automatic door jams, any base or other termination points or transition lines between the AcryliCon floor and other floor finishes must be marked and verified by the General Contractor.
- G. All trades are denied access to areas that receive new AcryliCon floor during surface preparation and installation process.

- H. Full depth concrete patching must be installed seven days prior to application of the floor system; consult AcryliCon USA for instructions.
- I. Skim coating with cementitious materials not allowed; consult AcryliCon USA for instructions.
- J. Cooler and freezer doors to be removed by others prior to the arrival of the AcryliCon installation crew, replacement of doors by others.
- K. Night and weekend access to the jobsite is required for installation of the AcryliCon floor system.
- L. Area to receive AcryliCon will be broom cleaned and cleared of all debris by the General Contractor prior to the arrival of installation crew.
- M. General Contractor will dislodge or clean all dirt, mortar, paint overspray, grease and oil, or any other wet or dry surface contamination. **(consult AcryliCon Technical Services for guidance).**
- N. Leaks through the roof, duct work or from any other source or area must be repaired immediately by the General Contractor.
- O. The owner agrees to provide sufficient refuse capacity at the jobsite location for the disposal of all materials utilized in the surface preparation and/or installation process. If no containers are provided, any refuse containers in the vicinity of the job site location will be utilized. It is the responsibility of the owner or his representative to dispose of, and/or empty these containers in a timely manner when they are full. If no containers exist or if the containers are full, the waste will be bagged or wrapped and left on the jobsite for proper disposal by others.
- P. Temperature Requirements: Maintain air and slab temperature in spaces where flooring is to be installed of not less than 45^oF or more than 72^oF for 48 hours prior to application and 24 hours after installation.
- Q. **All AcryliCon flooring must be installed just prior to drywall installation to allow for proper sanding steps.**

1.7 SCHEDULING

- A. AcryliCon USA will assist in coordinating with the Certified installer the scheduling and requirements for the AcryliCon installation.

1.8 WARRANTIES

- A. Manufacturer shall warrant materials are free from material defects and shall perform according to published literature if installed in accordance with correct procedures for a period of one year from completion.
- B. Installer shall warrant that materials are mixed and installed in accordance with manufacturer's published instructions and that installation shall be free from defects for a period of one year from completion

PART 2 - PART 2 – PRODUCTS

2.1 MATERIALS

- A. AcryliCon: 2-3mm nominal thickness AcryliCon Flake, Basis of Design
 - (i) Penetrating Primer Coat: Sealer with Primer Additive added on site

- (ii) Body Coat: Resin 1061sw mixed with SV Filler & Pigment
- (iii) Cast Colored Flake (max size of 1/8" flake).
- (iv) Topcoat (s): Sealer top coat.

2.2 COLORS

- A. Colors or blends as indicated on drawings. Only approved flakes shall be utilized in the system.

PART 3 - PART 3 – EXECUTION

APPROVED APPLICATORS

- A. Shall have a minimum of three years previous experience and be fully trained in the application of the manufacturers systems. Certification to this effect will be required from the manufacturer prior to placing an order for material.

3.2 EXAMINATION

- A. Concrete:
 - (i) Slab substrates are dry and free of curing compounds, sealers, hardeners, and other materials whose presence would interfere with the performance of the primer.
 - (ii) Determine adhesion and dryness characteristics by performing bond and moisture tests recommended by the manufacturer.
 - (iii) Bond Test: shall retain some of slab aggregate on bottom of test patch when removed.
 - (iv) The concrete must be fully cured for a minimum of 28 days prior to application of the coating system.
 - (v) No curing compounds are permitted without prior written manufacturers' approval.
 - (vi) Concrete and air temp must be between 45-72 F degrees throughout the installation

3.3 PREPARATION

- A. Pre Installation Bond Testing: Conduct manufacturer's recommended bond test for surface preparation evaluation prior to application of coating system in accordance with Clause 1.4. C
- B. Concrete Surface Preparation:
 - (i) Accessible concrete floor surfaces shall be mechanically prepared using a mobile shot blaster with dust extraction control similar to "Blastrac" type equipment or other mobile steel shot blast machines. Surfaces and embedded accumulations of paint, sealers or toppings, hardened concrete layers, laitance, power trowel finishes and other similar surface characteristics that inhibit the penetration of the primer into the substrate shall be completely removed, leaving a bare concrete surface having a profile similar to CSP 3-4 and exposing upper fascia of concrete aggregate.
 - (ii) Bush hammer, needle gun or scabble around all drains, cleanouts, perimeter or any other protrusions then saw cut and bush hammer termination points to provide a key and/or an impact resistant nose.

- (iii) Inaccessible floor areas to large mobile shot blast machine shall be mechanically abraded to the same degree of cleanliness, soundness, and profile using special shot blast edging equipment, needle guns, scabblers or bush hammers.
 - (iv) Grinding of the substrate/concrete as a primary surface preparation method is not allowed. Areas that are ground must still be shot blast, needle gunned or bush hammered.
 - (v) After surface preparation is complete, remove by vacuum, or other suitable means all traces or accumulations of dust, spent abrasives, laitance, removed sealer or toppings and other debris.
 - (vi) Conduct primer cure test
 - (vii) Conduct bond tests.
 - (viii) The application of specified coating system must commence prior to any water or other contamination of the prepared surface.
- C. Tent the work area with temporary partition of plastic sheeting to help contain dust, debris and odor during the application as best allowed by the work area.
- D. Setup and maintain ventilation system and temporary duct work to vent odor to the outside of the building.
- E. Shut down or deactivate building HVAC system in areas that work is to be performed, if required.
- F. Maintain venting system for two (2) hours after the final topcoat is applied.

3.4 INSTALLATION

- A. Seamless Flooring Installation: Finished floor system shall be uniform in color, texture and appearance.
- (i) Prime test for contaminants before commencing priming, cure time must be 45 minutes or less.
 - a. Apply primer with medium nap 9”- 30” rollers at rate of 100 square feet per gallon (25% Primer Additive). Any areas which have soaked in and do not have glossy appearance must be re-primed.
 - b. Flood primer into hairline cracks.
 - c. Fill larger cracks or day joints with Flexible Resin prior to application of body coat.
 - (ii) Body Coat: Gauge rake body coat at rate recommended by manufacturer and at thickness specified.
 - (iii) Colored Flake: Mixed in mechanical mixer and then cast into body coat in accordance with manufacturer’s instructions.
 - (iv) Top Coat (s): Install top coat (s) at the rate of approximately 100 sq. ft. per gallon per application. Topcoats will be heavily sanded at each layer to ensure flatness.
 - (v) Material Systems Time Limitations:
 - a. Pot Life at 68 degrees F 10-15 minutes
 - b. Cure Time at 68 degrees F 60 minutes
 - c. Recoat Time at 68 degrees F 60-90 minutes

- A. Cure Time: Cure coating for two hours at 68 degrees F after application of final roller coat in accordance with manufacturer's recommendations. Protect from any aggressive chemicals for 24 hours after final seal coat.
- B. Temperature of the air and substrate can not exceed 75 degrees F at any time during the installation. The optimal temperature range for installation is between 50-70 degrees F.
- C. Edge Termination: Edges that terminate at walls, floor junctures and other embedded items shall be neat and clean, uniform and cosmetically acceptable with no excessively thick or ragged edges.
- D. Detail work around drains and other fixed objects shall be done in accordance with manufacturer's recommendation.

3.5 FIELD QUALITY CONTROL

- A. Manufacturer's Field Services: Provide manufacturer's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with manufacturer's instructions. Record of inspection by manufacturer's representative with comments shall be provided to Construction Manager.

3.6 PROTECTION

- A. Protection: The General Contractor/Owner shall protect the AcryliCon system from damage by other trades.

3.7 CLEANING AND HANDOVER

- A. General Contractor's Responsibility:
 - (i) Repair or replace any damaged flooring caused by other trades.
 - (ii) Remove material splatters and other surface materials defects caused by other trades.
 - (iii) Remove all temporary coverings and protection of floor surface.
 - (iv) Remove all construction debris created from the site.
 - (v) Cleaning of all installed floor systems will be in accordance with AcryliCon's instructions prior to handover to the client's representative.
 - (vi) Cleaning - Water temperatures can not exceed 145 degrees F

(consult Acrylicon Technical Services for guidance).

END OF SECTION 09 70 00

SECTION 09 91 00 - PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes surface preparation and field painting of the following:
 - 1. Exposed exterior items and surfaces.
 - 2. Exposed interior items and surfaces.
 - 3. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.
- B. Related Sections include the following:
 - 1. Division 07 Section "Joint Sealants"
- C. Paint exposed surfaces, except where the paint schedules indicate that a surface or material is not to be painted or is to remain natural. If the paint schedules do not specifically mention an item or a surface, paint the item or surface the same as similar adjacent materials or surfaces whether or not schedules indicate colors. If the schedules do not indicate color or finish, the Architect will select from standard colors and finishes available.
 - 1. Painting includes field painting of exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and iron work, and primed metal surfaces of mechanical and electrical equipment.
- D. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.
 - 1. Prefinished items include the following factory-finished components:
 - a. Architectural woodwork and casework.
 - b. Acoustical wall panels.
 - c. Metal toilet enclosures.
 - d. Metal lockers.
 - e. Unit kitchens.
 - f. Elevator equipment.
 - g. Finished mechanical and electrical equipment.

- h. Light fixtures.
 - i. Distribution cabinets.
- 2. Concealed surfaces include walls or ceilings in the following generally inaccessible spaces:
 - a. Foundation spaces.
 - b. Furred areas.
 - c. Ceiling plenums.
 - d. Utility tunnels.
 - e. Pipe spaces.
 - f. Duct shafts.
 - g. Elevator shafts.
- 3. Finished metal surfaces include the following:
 - a. Anodized aluminum.
 - b. Stainless steel.
 - c. Chromium plate.
 - d. Copper.
 - e. Bronze and brass.
- 4. Operating parts include moving parts of operating equipment and the following:
 - a. Valve and damper operators.
 - b. Linkages.
 - c. Sensing devices.
 - d. Motor and fan shafts.
- 5. Labels: Do not paint over Underwriters Laboratories (UL), Factory Mutual (FM), or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.

1.3 SUBMITTALS

- A. Product Data: For each paint system specified. Include block fillers and primers.
 - 1. Manufacturer's Information: Provide manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material proposed for use.
- B. Samples for Initial Selection: Manufacturer's color charts (fan decks) showing the full range of colors available for each type of finish-coat material indicated.
 - 1. After color selection, the Architect will furnish color chips for surfaces to be coated.
- C. Samples for Verification: Of each color and material to be applied, with texture to simulate actual conditions, on representative Samples of the actual substrate.
 - 1. Provide stepped Samples, defining each separate coat, including block fillers and primers. Use representative colors when preparing Samples for review. Resubmit until required sheen, color, and texture are achieved.

2. Provide a list of materials and applications for each coat of each sample. Label each sample for location and application.

D. Qualification Data: For Applicator.

1.4 QUALITY ASSURANCE

- A. Applicator Qualifications: Engage an experienced applicator who has completed painting system applications similar in material and extent to that indicated for this Project with a record of successful in-service performance.
- B. Source Limitations: Obtain block fillers, primers, and undercoat materials for each coating system from the same manufacturer as the finish coats.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the Project Site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label, and the following information:
 1. Product name or title of material.
 2. Product description (generic classification or binder type).
 3. Manufacturer's stock number and date of manufacture.
 4. Contents by volume, for pigment and vehicle constituents.
 5. Thinning instructions.
 6. Application instructions.
 7. Color name and number.
 8. VOC content.
- B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of **45 deg F (7 deg C)**. Maintain containers used in storage in a clean condition, free of foreign materials and residue.
 1. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

1.6 PROJECT CONDITIONS

- A. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between **50 and 90 deg F (10 and 32 deg C)**.
- B. Apply solvent-thinned paints only when the temperature of surfaces to be painted and surrounding air temperatures are between **45 and 95 deg F (7.2 and 35 deg C)**.
- C. Do not apply paint in snow, rain, fog, or mist; or when the relative humidity exceeds 85 percent; or at temperatures less than **5 deg F (3 deg C)** above the dew point; or to damp or wet surfaces.
 - 1. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer during application and drying periods.

1.7 EXTRA MATERIALS

- A. Furnish extra paint materials from the same production run as the materials applied in the quantities described below. Package paint materials in unopened, factory-sealed containers for storage and identify with labels describing contents. Deliver extra materials to the Owner.
 - 1. Quantity: Furnish the Owner with an additional 5 percent, but not less than **1 gal.**, of each material and color applied.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in the paint schedules.
 - 1. Benjamin Moore & Co. (Moore).
 - 2. PPG Industries, Inc. (PPG).
 - 3. Sherwin-Williams Co. (S-W).
 - 4. MA Bruder & Sons, Inc. (MAB)
 - 5. ICI Paints (ICI)

2.2 PAINT MATERIALS, GENERAL

- A. Material Compatibility: Provide block fillers, primers, undercoats, and finish-coat materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
- B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified. Paint-material containers not displaying manufacturer's product identification will not be acceptable.
 - 1. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish manufacturer's material data and certificates of performance for proposed substitutions.
- C. Chemical Components of Interior Paints and Coatings: Provide products that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24) and the following chemical restrictions:
 - 1. Flat Paints and Coatings: VOC content of not more than 50 g/L.
 - 2. Non-Flat Paints and Coatings: VOC content of not more than 150 g/L.
 - 3. Anticorrosive Coatings: VOC content of not more than 250 g/L.
 - 4. Varnishes and Sanding Sealers: VOC content of not more than 350 g/L.
 - 5. Stains: VOC content of not more than 250 g/L.
 - 6. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
 - 7. Restricted Components: Paints and coatings shall not contain any of the following:
 - a. Acrolein.
 - b. Acrylonitrile.
 - c. Antimony.
 - d. Benzene.
 - e. Butyl benzyl phthalate.
 - f. Cadmium.
 - g. Di (2-ethylhexyl) phthalate.
 - h. Di-n-butyl phthalate.
 - i. Di-n-octyl phthalate.
 - j. 1,2-dichlorobenzene.
 - k. Diethyl phthalate.
 - l. Dimethyl phthalate.
 - m. Ethylbenzene.
 - n. Formaldehyde.

- o. Hexavalent chromium.
- p. Isophorone.
- q. Lead.
- r. Mercury.
- s. Methyl ethyl ketone.
- t. Methyl isobutyl ketone.
- u. Methylene chloride.
- v. Naphthalene.
- w. Toluene (methylbenzene).
- x. 1,1,1-trichloroethane.
- y. Vinyl chloride.

D. Colors: Provide color selections made by the Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with the Applicator present, under which painting will be performed for compliance with paint application requirements.
 - 1. Do not begin to apply paint until unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
 - 2. Start of painting will be construed as the Applicator's acceptance of surfaces and conditions within a particular area.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 - 1. Concrete: 12 percent.
 - 2. Masonry (Clay and CMU): 12 percent.
 - 3. Wood: 15 percent.
 - 4. Gypsum Board: 12 percent.
 - 5. Plaster: 12 percent.
- C. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.
- D. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- E. Proceed with coating application only after unsatisfactory conditions have been corrected.
 - 1. Application of coating indicates acceptance of surfaces and conditions.

- F. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
 - 1. Notify the Architect about anticipated problems using the materials specified over substrates primed by others.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Manual" applicable to substrates indicated.
- B. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of the size or weight of the item, provide surface-applied protection before surface preparation and painting.
 - 1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
 - 1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
- D. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.
 - 1. For existing surfaces, remove all peeling paint, loose and deliterious materials that may impair the performance of the finish coating and that may affect the visually intended results.
 - 2. Sand, clean, dry, etch, neutralize and/or test all surfaces under adequate illumination, ventilation and temperature requirements.
 - 3. Provide barrier coats over incompatible primers or remove and reprime.
 - 4. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.
 - 5. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceed that permitted in manufacturer's written instructions.

6. Steel Substrates: Remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer but not less than the following:
 - a. SSPC-SP 3, "Power Tool Cleaning."
 7. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
 8. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
 9. Aluminum Substrates: Remove loose surface oxidation.
 10. Wood Substrates:
 - a. Scrape and clean knots, and apply coat of knot sealer before applying primer.
 - b. Sand surfaces that will be exposed to view, and dust off.
 - c. Prime edges, ends, faces, undersides, and backsides of wood.
 - d. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.
- E. Materials Preparation: Mix and prepare paint materials according to manufacturer's written instructions.
1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
 2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
 3. Use only thinners approved by paint manufacturer and only within recommended limits.
- F. Tinting: Tint each undercoat a lighter shade to simplify identification of each coat when multiple coats of the same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

3.3 APPLICATION

- A. General: Apply paint according to manufacturer's written instructions and to recommendations in "MPI Manual." Use applicators and techniques best suited for substrate and type of material being applied.
1. Paint colors, surface treatments, and finishes are indicated in the schedules.
 2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.

3. Provide finish coats that are compatible with primers used.
 4. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, convector covers, covers for finned-tube radiation, grilles, and similar components are in place. Extend coatings in these areas, as required, to maintain the system integrity and provide desired protection.
 5. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before the final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 6. Paint interior surfaces of ducts with a flat, nonspecular black paint where visible through registers or grilles.
 7. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
 8. Finish exterior doors on tops, bottoms, and side edges the same as exterior faces.
 9. Finish interior of wall and base cabinets and similar field-finished casework to match exterior.
 10. Sand lightly between each succeeding enamel or varnish coat.
- B. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
1. The number of coats and the film thickness required are the same regardless of application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions, sand between applications.
 2. Omit primer on metal surfaces that have been shop primed and touchup painted.
 3. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
 4. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and where application of another coat of paint does not cause the undercoat to lift or lose adhesion.
- C. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.
- D. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate. Provide the total dry film thickness of the entire system as recommended by the manufacturer.

- E. Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to items exposed in equipment rooms and in occupied spaces.
 - F. Mechanical items to be painted include, but are not limited to, the following:
 - 1. Piping, pipe hangers, and supports.
 - 2. Heat exchangers.
 - 3. Tanks.
 - 4. Ductwork.
 - 5. Insulation.
 - 6. Motors and mechanical equipment.
 - 7. Accessory items.
 - G. Electrical items to be painted include, but are not limited to, the following:
 - 1. Conduit and fittings.
 - 2. Switchgear.
 - 3. Panelboards.
 - H. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.
 - I. Prime Coats: Before applying finish coats, apply a prime coat of material, as recommended by the manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn through or other defects due to insufficient sealing.
 - J. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.
 - 1. Provide scheduled finish for final coats as indicated.
 - K. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.
- 3.4 COLOR SCHEDULE
- A. Apply paint in accordance with the color schedule indicated on the drawings.

- B. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks, providing crisp, clean transitions where colors change, either at a change in substrate orientation (such as a corner) or where directed to make a color change on the same surface.

3.5 FIELD QUALITY CONTROL

- A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.
 - 1. Contractor shall touch up and restore painted surfaces damaged by testing.
 - 2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

3.6 CLEANING

- A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from the site.
 - 1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping. Be careful not to scratch or damage adjacent finished surfaces.

3.7 PROTECTION

- A. Protect work of other trades, whether being painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Architect.
- B. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.
 - 1. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.8 EXTERIOR PAINT SCHEDULE

- A. Ferrous Metal: Provide the following finish systems over exterior ferrous metal. Primer is not required on shop-primed items.
 - 1. Full-Gloss, Alkyd-Enamel Finish: 2 finish coats over a rust-inhibitive primer.
 - a. Primer: Rust-inhibitive metal primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than **1.3 mils (0.033 mm)**.
 - 1) Moore: M06 Alkyd Metal Primer

- 2) PPG: 6-208 Speedhide Interior/Exterior Rust Inhibitive Steel Primer.
 - 3) S-W: Kem Bond HS Primer B50 Series.
 - 4) MAB: Rustolastic Anti-Corrosive Primer (073 line)
 - b. First and Second Coats: Full-gloss, exterior, alkyd enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than **3.0 mils (0.076 mm)**.
 - 1) Moore: Impervo Enamel #133.
 - 2) PPG: 7-282 PPG Interior/Exterior Gloss-Oil Enamel.
 - 3) S-W: Industrial Enamel B54Z-400 Series
 - 4) MAB: Rustolastic Alkyd Finish Coating (074 line).
- B. Exterior Metal (Ductwork or other special surfaces):
1. Semi-Gloss, One Component Acrylic Finish: 2 finish coats over a corrosion resistant primer.
 - a. Primer: Corrosion resistive metal primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than **2.3 mils**
 - 1) S-W: DTM Acrylic Primer/Finish, B66W1.
 - 2) PPG: 90-912 Pitt Tech Plus Acrylic DTM Primer Finish
 - b. First and Second Coats: Semi-gloss, exterior, Acrylic applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than **2.5 mils per coat**.
 - 1) S-W: Sher-Cryl HPA High Performance Acrylic, B66-350 Series
 - 2) PPG: 90-series Pitt Tech Plus Acrylic DTM Enamel
- C. Concrete, Stucco, and Masonry (Other than Concrete Masonry Units): Provide the following finish systems over exterior concrete, stucco, and brick masonry surfaces:
1. Flat Acrylic Finish: 2 finish coats over a primer.
 - a. Primer: Alkali-resistant, exterior, acrylic-latex primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than **1.5 mils (0.038 mm)**.
 - 1) ICI: Dulux 2001-1200
 - 2) Moore: Primer not required over this substrate.
 - 3) PPG: 4-603 PermaCrete Interior/Exterior Acrylic Latex Alkali Resistant Primer.
 - 4) S-W: Loxon Masonry Primer, A24-300
 - 5) MAB: Sea Shore Latex Primer
 - b. First and Second Coats: Flat, exterior, acrylic-emulsion paint applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than **2.4 mils (0.061 mm)**.
 - 1) ICI: Dulux 2201
 - 2) Moore: MoorLife Latex House Paint #105.
 - 3) PPG: 6-650XI Speedhide Exterior Acrylic House Paint
 - 4) S-W: A-100 Exterior Latex Flat, A6
 - 5) MAB: Sea Shore Latex house Paint 061 line

2. Low-Luster Acrylic Finish: 2 finish coats over a primer.
 - a. Primer: Alkali-resistant, exterior, acrylic-latex primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than **1.3 mils (0.033 mm)**.
 - 1) ICI: Dulux 2001-1200 Primer
 - 2) Moore: Fresh Start Acrylic 023
 - 3) PPG: 4-603 PermaCrete Interior/Exterior Acrylic Latex Alkali Resistant Primer.
 - 4) S-W: Loxon Masonry Primer, A24-300
 - 5) MAB: Sea Shore Latex Primer 056-958
 - b. First and Second Coats: Low-luster (eggshell or satin), exterior, acrylic-latex paint applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than **2.3 mils (0.058 mm)**.
 - 1) ICI: Dulux Satin 2403
 - 2) Moore: MoorGard Latex House Paint #103.
 - 3) PPG: 6-2045XI Speedhide Exterior Satin Acrylic House Paint
 - 4) S-W: A-100 Exterior Latex Satin, A82
 - 5) MAB: Sea Shore Satin House Paint 060 line

- D. Wood Substrates: New Surfaces Including wood trim, architectural woodwork, doors, windows, wood siding, wood fences, if applicable.
 1. Semi-Gloss Acrylic Finish: 2 finish coats over a primer plus knot sealer.
 - a. Knot Sealer: Penetrating acrylic latex primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than **1.5 mils (0.038 mm)**.
 - 1) MAB: LokTite Latex primer and Stain Sealer
 - b. Primer: Alkali-resistant, exterior, acrylic-latex primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than **1.3 mils (0.033 mm)**.
 - 1) ICI: Dulux 2001-1200 Primer
 - 2) Moore: Fresh Start Acrylic 023
 - 3) PPG: Sun Proof Primer 72-1
 - 4) S-W: Exterior Latex Primer, B42W8041
 - 5) MAB: Sea Shore Latex Primer MB056958
 - c. First and Second Coats: Low-luster (eggshell or satin), exterior, acrylic-latex paint applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than **2.3 mils (0.058 mm)**.
 - 1) ICI: Dulux Satin 2403
 - 2) Moore: Aura Exterior Semi - Gloss #632.
 - 3) PPG: Manor Hall 75 Series
 - 4) S-W: A-100 Exterior Latex, A8, gloss
 - 5) MAB: Sea Shore Satin House Paint 060 line

- E. Wood Substrates: Existing Surfaces Including [wood trim] [architectural woodwork] [doors] [windows] [wood siding] [wood fences].
1. Semi-Gloss Acrylic Finish: 2 finish coats over a primer plus knot sealer.
 - a. Primer: Alkali-resistant, exterior, acrylic-latex primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than **1.3 mils (0.033 mm)**.
 - 1) ICI: Dulux 2001-1200 Primer
 - 2) Moore: Fresh Start Acrylic 023
 - 3) PPG: Sun Proof Primer 72-1
 - 4) S-W: Exterior Oil-Based Alkyd Primer, Y24W8020
 - 5) MAB Sea Shore Latex Primer MB056958
 - b. First and Second Coats: Low-luster (eggshell or satin), exterior, acrylic-latex paint applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than **2.3 mils (0.058 mm)**.
 - 1) ICI: Dulux Satin 2403
 - 2) Moore: Aura Exterior Semi - Gloss #632.
 - 3) PPG: Manor Hall 75 Series
 - 4) S-W: A-100 Exterior Latex, A8, gloss
 - 5) MAB Sea Shore Satin House Paint 060 line

3.9 INTERIOR PAINT SCHEDULE

- A. Concrete (Vertical Surfaces): Provide the following finish systems over interior concrete:
1. Semigloss, Latex Finish: 2 finish coats over an undercoat.
 - a. Undercoat: Interior, latex-based, undercoater, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than **1.2 mils (0.031 mm)**.
 - 1) S-W: ProMar 200 Zero VOC Primer
 - 2) MAB: Rich Lux Latex Sealer Undercoater
 - 2) PPG: 4-603 PermaCrete Interior/Exterior Acrylic Latex Alkali Resistant Primer.
 - 4) ICI: Aquacrylic GRIPPER 3210
 - b. Finish Coats: Odorless, semigloss, **Latex**, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than **1.5 mils (0.038 mm)** for each of the two coats.
 - 1) S-W: ProMar 200 Zero VOC, semi-gloss
 - 2) MAB: Rich Lux Low Lustre Latex (028 line).
 - 2) PPG: 6-500 series Speedhide Acrylic Latex Semi Gloss
 - 4) ICI: Ultra-Hide Latex Semi-Gloss Enamel, 1416
 2. Semi-Gloss Epoxy Finish: 2 finish coats.

- a. Primer: none required
 - b. 2 Coats:
 - 1) S-W Epoxy B70W211- B60V25, semi-gloss
 - 2) PPG Pitt Glaze WB1Acrylic Epoxy
 - 3) MAB Ply Mastic Epoxy (044 line)
 - 4) Devoe: True-Glaze-WB 4406, semi-gloss
- B. Concrete Masonry Units: Provide the following finish systems over interior concrete masonry block units:
1. Semigloss, Latex-Enamel Finish: 2 finish coats over an undercoat and a filled surface.
 - a. Block Filler: High-performance, latex-based, block filler applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than **5.0 mils (0.13 mm)**.
 - 1) Moore: Super Craft Block Filler #285.
 - 2) PPG: Pitt Glaze 16-90 Block Filler
 - 3) S-W: Heavy-Duty Block Filler B42W46
 - 4) MAB: Block Kote #2000 (064-140).
 - b. Undercoat: Interior, latex-based, enamel undercoater, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than **1.2 mils (0.031 mm)**.
 - 1) Moore: Pristine Ecospec 231
 - 2) PPG: 6-4900 Speedhide "0" Interior Latex Primer
 - 3) S-W: ProMar 200 Zero VOC, semi-gloss-
 - 4) MAB: Rich Lux Latex Sealer/Undercoater (037-154)
 - c. Finish Coat: Odorless, semigloss, **Latex**, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than **1.5 mils (0.038 mm)**.
 - 1) Moore: Regal Aqua Pearl 310.
 - 2) PPG: 6-4310 Speedhide "0" Interior Latex Eggshell
 - 3) S-W: ProMar 200 Zero VOC, semi-gloss
 - 4) MAB: Rich Lux Low Lustre Latex (028 line).
 2. Epoxy Finish: 2 finish coats over an undercoat and a filled surface.
 - a. Block Filler: High-performance, latex-based, block filler applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than **5.0 mils (0.13 mm)**.
 - 1) ICI: Bloxfil 4000 Interior/Exterior Latex Block Filler.
 - 2) Moore: Supercraft Interior & Exterior Block Filler #285.
 - 3) PPG: Pitt Glaze 16-90 Latex Block Filler.
 - 4) S-W: Heavy-Duty Block Filler B42W46.
 - 5) MAB: Block Kote #1000 or #2000 (spray or roll)
 - b. 2nd Coat:
 - 1) S-W Waterbased Catalyzed Epoxy, B70 Series.
 - 2) MAB Ply Mastic Epoxy (044 line)
 - c. 3rd Coat:

- 1) SW Waterbased Catalyzed Epoxy, B70 Series.
- 2) MAB Ply Mastic Epoxy (044 line)

C. Gypsum Board: Provide the following finish systems over interior gypsum board surfaces:

- 1. Low-Luster, Acrylic-Enamel Finish: 2 finish coats over a primer.
 - a. Primer: Latex-based, interior primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than **1.2 mils (0.031 mm)**.
 - 1) Moore: Regal First Coat Interior Latex Primer & Underbody #216.
 - 2) PPG: 6-2 Speedhide Interior Latex Primer Sealer
 - 3) MAB: Rich Lux Latex Sealer/Undercoater (037-154).
 - 4) S-W: ProMar 200 Zero VOC Latex Primer,
 - b. First and Second Coats: Low-luster (eggshell or satin), acrylic-latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than **2.8 mils (0.071 mm)**.
 - 1) Moore: Moore's Regal AquaVelvet #319.
 - 2) PPG: 6-411 Speedhide Interior Latex EggshellEnanel
 - 3) MAB: Rich Lux Eggshell (029 line).
 - 4) S-W: ProMar 200 Zero VOC Latex Eg-shel.
- 2. Epoxy Paint Finish
 - a. Primer: Interior Latex Primer
 - 1) S.W. ProMar 200 Interior Latex Primer,
 - 2) MAB Rich Lux Latex Sealer/Undercoater 037-154
 - 3) PPG: 6-2 Speedhide Interior Latex Primer Sealer
 - b. First and Second Coats: Applied at spreading rate recommended by the manufacturer
 - 1) S.W. Waterbased Catalyzed Epoxy B-70 Series
 - 2) MAB Ply Tile 530 Waterbased Epoxy
(054, 059 or 051 depending on sheen)
 - 3) 3) Pitt Glaze WB1Acrylic Epoxy

D. Ferrous Metal: Provide the following finish systems over ferrous metal:

- 1. Semigloss, Alkyd-Enamel Finish: One finish coat over an enamel undercoater and a primer.
 - a. Primer: Quick-drying, rust-inhibitive, alkyd-based or epoxy-metal primer, as recommended by the manufacturer for this substrate, applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than **1.5 mils (0.038 mm)**.
 - 1) Moore: M06 Alkyd Metal Primer
 - 2) PPG: 7-852 PPG Interior/Exterior Rust Inhibitive Steel Primer.
 - 3) S-W: Kem Bond HS Primer B54Z-400 Series.
 - 4) MAB: Rustolastic Anti-Corrosive Primer (073 line).

- b. 2nd & Finish Coats: Odorless, high gloss, alkyd, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than **1.4 mils (0.036 mm)**.
 - 1) Moore: Impervo Enamel #133.
 - 2) PPG: 7-282 PPG Gloss Industrial Interior Enamel
 - 3) S-W: Industrial Enamel HS, B54Z-400 Series
 - 4) MAB: Rust-O-Lastic Finish Coating (074 line).

- E. Woodwork , Hardboard and Plywood: Provide the following opaque paint finish systems over new, interior wood surfaces:
 1. Semigloss, Latex-Enamel Finish: 2 finish coats over a primer.
 - a. Primer: Latex-based, interior enamel undercoater applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than **1.2 mils (0.031 mm)**.
 - 1) ICI: Prep & Prime 1000-1200
 - 2) Moore: Regal 1st Coat #216
 - 3) PPG: 17-921 PPG Seal Grip Acrylic Bonding Primer
 - 4) S-W: Premium Wall and Wood Primer.
 - 5) MAB Rich Lux Latex Sealer/Undercoater 037-154
 - b. First and Second Coats: Odorless, semigloss, **Latex**, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than **2.4 mils (0.061 mm)**.
 - 1) ICI: Dulux Professional 1407.
 - 2) Moore: Regal Aqua Pearl 310
 - 3) PPG: Manor Hall 87-6 Series
 - 4) S-W: ProClassic Waterborne Semi-Gloss,B31 Series
 - 5) MAB Rich Lux Latex Semi-Gloss (028 line).

- F. Concrete Floor Sealer:
 1. First Coat: Acrylic Concrete Sealer (W.R. Meadows VOCOMP -25). Apply to following surfaces: Concrete floors where concrete sealer is indicated on finish schedule.

- G. Spray Park Concrete:
 1. Rubberized Non-Slid Coating: 1 finish coat over 2 part primer.
 - a. Primer: **CP-10: Water Based Epoxy Primer**. CP-10 is a two-part, one-to-one mix, water-based primer used for concrete, wood, fiberglass, and painted surfaces.
 - 1) Tuffcoat, <http://tuffcoat.net/>
 - b. Finish Coat: UT-100: Standard Rubberized Coating.
 - 1) Tuffcoat, <http://tuffcoat.net/>

END OF SECTION 09 91 00

SECTION 10 14 00 - SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following types of signs:
 - 1. Panel signs.
 - 2. Dimensional Letters

1.3 SUBMITTALS

- A. General: Submit the following according to the Conditions of the Contract and Division 01 Specification Sections.
- B. Product data for each type of sign specified, including details of construction relative to materials, dimensions of individual components, profiles, and finishes.
- C. Shop drawings showing fabrication and erection of signs. Include plans, elevations, and large-scale sections of typical members and other components. Show anchors, grounds, layout, reinforcement, accessories, and installation details.
- D. Samples: Provide the following samples of each sign component for initial selection of color, pattern and surface texture as required and for verification of compliance with requirements indicated.
 - 1. Samples for selection of color, pattern, and texture selected and compliance with requirements indicated:
 - a. Cast Acrylic Sheet and Plastic Laminate: Provide a sample panel not less than 8-1/2 inches by 11 inches for each material, color, texture, and pattern required. On each panel include a representative sample of the graphic image process required, showing graphic style, and colors and finishes of letters, numbers, and other graphic devices.
 - b. Aluminum: Samples of each finish type and color, on 6-inch-long sections of extrusions and not less than 4-inch squares of sheet or plate. Where finishes involve normal color and texture variations, include sample sets showing the full range of variations expected.

- c. Dimensional Letters: Provide full-size representative samples of each dimensional letter type required, showing letter style, color, and material finish and method of attachment.

1.4 QUALITY ASSURANCE

- A. Sign Fabricator Qualifications: Firm experienced in producing signs similar to those indicated for this Project, with a record of successful in-service performance, and sufficient production capacity to produce sign units required without causing delay in the Work.
- B. Single-Source Responsibility: For each separate sign type required, obtain signs from one source of a single manufacturer.
- C. Design Concept: The Drawings indicate sizes, profiles, and dimensional requirements of signs and are based on the specific types and models indicated. Sign units by other manufacturers may be considered provided deviations in dimensions and profiles do not change the design concept as judged by the Architect. The burden of proof of equality is on the proposer.

1.5 PROJECT CONDITIONS

- A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication to ensure proper fitting. Show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - 1. Manufacturers of Panel Signs:
 - a. ASI Sign Systems, Inc.
 - b. Best Manufacturing Company.
 - c. Beyond Signs, Inc.
 - d. Clarke Systems.
 - e. Mohawk Sign Systems.
 - f. Vomar Products, Inc.
 - 2. Manufacturers of Dimensional Letters and Graphics:
 - a. ASI Sign Systems, Inc., LM Series, Basis of Design
 - b. Gemini Incorporated.
 - c. Metallic Arts, Inc.
 - d. The Southwell Company.
 - e. Vomar Products, Inc.

2.2 MATERIALS

- A. Cast Acrylic Sheet: Provide cast (not extruded or continuous cast) methyl methacrylate monomer plastic sheet, in sizes and 3/8" thickness, with a minimum flexural strength of 16,000 psi when tested according to ASTM D 790, with a minimum allowable continuous service temperature of 176 deg F (80 deg C), and of the following general types:
 - 1. Opaque Sheet: Provide colored opaque acrylic sheet in colors and finishes as selected from the manufacturer's standards.
- B. Fasteners: Use concealed fasteners fabricated from metals that are not corrosive to the sign material and mounting surface.
- C. Anchors and Inserts: Use nonferrous metal or hot-dipped galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.

2.3 PANEL SIGNS

- A. Panel Signs: Comply with requirements indicated for materials, thicknesses, finishes, colors, designs, shapes, sizes, and details of construction.
 - 1. Produce smooth, even, level sign panel surfaces, constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch measured diagonally.
- B. Unframed Panel Signs: Fabricate signs with edges mechanically and smoothly finished to conform with the following requirements:
 - 1. Edge Condition: Square cut.
 - 2. Edge Color for Plastic Laminate: Edge color same as background.
 - 3. Corner Condition: Corners rounded.
- C. Graphic Content and Style: Provide sign copy that complies with the requirements indicated for size, style, spacing, content, position, material, finishes, and colors of letters, numbers, and other graphic devices.
- D. Raised Copy: Machine-cut copy characters from matte-finished opaque acrylic sheet and chemically weld onto the acrylic sheet forming sign panel face. Produce precisely formed characters with square cut edges free from burrs and cut marks.
 - 1. Panel Material: Matte-finished opaque acrylic sheet.
 - 2. Raised Copy Thickness: Not less than 1/32 inch.
 - 3. Helvetica Medium - 1 inch high letters.

- E. Tactile and Braille Sign: Manufacturer's standard process for producing text and symbols complying with ADA-ABA Accessibility Guidelines and with ICC/ANSI A117.1. Text shall be accompanied by Grade 2 Braille. Produce precisely formed characters with square-cut edges free from burrs and cut marks; Braille dots with domed or rounded shape.
 - 1. Raised-Copy Thickness: Not less than **1/32 inch (0.8 mm)**.
- F. Provide signs for all rooms with name and room number as shown in Room Finish Schedule on drawings, subject to Owner's final sign schedule. Provide one sign per door into space. Omit corridors and vestibules.
 - 1. Room Number Signs: 3" high x 6" wide.
 - 2. Room Name Signs: 3" high x 9" wide or as required to suit copy indicated.
- G. Barrier Free Accessibility Sign: Provide 6" x 6" signs at accessible rooms, including toilets and stalls, displaying international symbol of accessibility.

2.4 DIMENSIONAL LETTERS

- A. Cast Letters and Numbers: Form individual letters and numbers by casting. Produce characters with smooth, flat faces, sharp corners, and precisely formed lines and profiles, free from pits, scale, sand holes, or other defects. Cast lugs into the back of characters and tap to receive threaded mounting studs. Comply with requirements indicated for finish, style, and size.
 - 1. Thermoformed and injection molded plastic.
 - 2. Letter Height: As indicated on drawings.
 - 3. Letter Depth: 2"
 - 4. Letter Style: Franklin Gothic Demi
 - 5. Standard integral color finish.

2.5 EXTERIOR SIGNS

- A. Handicapped parking signs, and traffic control signs as shown with silk screened copy, on baked enamel aluminum, colors as indicated or as otherwise required by authorities having jurisdiction, (Manual on Uniform Traffic Control Devices latest edition) with aluminum post embedded in concrete.
- B. Barrier Free Accessibility Sign: Provide 8" x 8" aluminum signs at accessible entrances, displaying international symbol of accessibility.

2.6 FINISHES

- A. Colors and Surface Textures: For exposed sign material that requires selection of materials with integral or applied colors, surface textures or other characteristics related to appearance, provide color matches indicated, or if not indicated, as selected by the Architect from the manufacturer's standards.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Locate sign units and accessories where indicated, using mounting methods of the type described and in compliance with the manufacturer's instructions.
 - 1. Install signs level, plumb, and at the height indicated, with sign surfaces free from distortion or other defects in appearance.
- B. Wall-Mounted Panel Signs: Attach panel signs to wall surfaces using the methods indicated below:
 - 1. Silicone-Adhesive Mounting: Use liquid silicone adhesive recommended by the sign manufacturer to attach sign units to irregular, porous, or vinyl-covered surfaces. Use double-sided vinyl tape where recommended by the sign manufacturer to hold the sign in place until the adhesive has fully cured.

3.2 CLEANING AND PROTECTION

- A. After installation, clean soiled sign surfaces according to the manufacturer's instructions. Protect units from damage until acceptance by the Owner.

END OF SECTION 10 14 00

SECTION 10 21 14 - SOLID PLASTIC TOILET PARTITIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Extent of toilet partitions is indicated on drawings.
- B. Types of toilet compartments include:
 - 1. Solid plastic partitions
- C. Styles of toilet compartments include:
 - 1. Floor-anchored, overhead braced.
- D. Styles of screens include:
 - 1. Wall-hung.
- E. Related Sections include the following:
 - 1. Division 10 Section "Toilet and bath Accessories"

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's detailed technical data for materials, fabrication, and installation, including catalog cuts of anchors, hardware, fastenings, and accessories.
- B. Shop Drawings: Submit shop drawings for fabrication and erection of toilet partition assemblies not fully described by product drawings, templates, and instructions for installation of anchorage devices built into other work.
- C. Samples: Submit full range of color samples for each type of unit required. Submit 2 x 2 inch minimum, in type of finish specified, for color verification after selections have been made.

1.4 QUALITY ASSURANCE

- A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication where possible, to ensure proper fitting of work. However, allow for adjustments within specified tolerances where ever taking of field measurements before fabrication might delay work.
- B. Coordination: Furnish inserts and anchorages which must be built into other work for installation of toilet partitions and related work; coordinate delivery with other work to avoid delay.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:
 - 1. Bradley Corporation, The Mills Company, Menomonee Falls, WI 53051
 - a. Contact Information (800)272-3539, fax (262)251-5817; Email info@BradleyCorp.com Website www.bradleycorp.com.
 - 2. Scranton Products (Santana/Comtec/Capitol)
- B. Manufacturer Qualifications: Approved manufacturer listed in this section, with minimum [5] years experience in the manufacture of toilet compartments. Manufacturers seeking approval must submit the following in accordance with Instructions to Bidders and Division 01 requirements:
 - 1. Product data, including test data from qualified independent testing agency indicating compliance with requirements.
 - 2. Samples of each component of product specified.
 - 3. List of successful installations of similar products available for evaluation by Architect.
- C. Source Limitations: Obtain toilet compartment components and accessories from single manufacturer.

2.2 MATERIALS

- A. General: Provide materials which have been selected for surface flatness and smoothness. Exposed surfaces which exhibit pitting, seam marks, roller marks, stains, discolorations, or other imperfections on finished units are not acceptable.
- B. Doors, panels and pilasters shall be 1" thick constructed from High Density Polyethylene (HDPE) resins. Partitions shall be fabricated from polymer resins compounded under high pressure, forming

a single component which is waterproof, nonabsorbent and has a self-lubricating surface that resists marks from pens, pencils, markers and other writing instruments.

1. Provide panels with minimum 30 percent pre-consumer recycled content.
2. Provide panels with 100 percent post-consumer recycled content.
3. Provide panels with 100 percent pre-consumer recycled content.

C. Partitions shall comply with the following requirements:

1. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84 by qualified testing agency. Identify products with appropriate markings of applicable testing agency.
2. IBC Flame Spread Index:
 - a. Class B: 26-75
 - b. Class C: 76-200
3. IBC Smoke Developed Index:
 - a. Class B: 0-450
 - b. Class C: 0-450
4. Indoor Environmental Quality Certification: Provide certificate indicated that products have been certified under the following programs, or a comparable certification acceptable to Owner:
 - a. GREENGUARD Indoor Air Quality Certified.
 - b. GREENGUARD Certified for Children and Schools.
5. Warranty: Provide manufacturer's standard form in which manufacturer agrees to repair or replace products that fail in materials or workmanship during the following period after substantial completion:
 - a. Plastic Toilet Partitions: Against corrosion, breakage, and delamination: 15 years.

2.3 FABRICATION

- A. General: Furnish standard doors, panels, screens, and pilasters fabricated for partition system, unless otherwise indicated. Furnish units with cutouts, drilled holes, and internal reinforcement to receive partition-mounted hardware, accessories, and grab bars, as indicated.

- B. Overhead-Braced Partitions: Provide manufacturer's standard corrosion-resistant supports, leveling mechanism, and anchors at pilasters to suit floor conditions. Provide shoes at pilasters to conceal supports and leveling mechanism.
1. Basis of Design Product: Bradley, Mills Partitions, Sentinel, Series 400.
- C. Wall-Hung Screen: Furnish panel units in sizes indicated, of same construction and finish as partition system panels.
1. Basis of Design Product: Bradley, Mills Partitions, Model No. 4.
- D. Minimum requirements for partitions are as follows:
1. Doors: 1 inch thick equipped with gravity type hinges and push-pull hardware. Provide outswinging, over-sized doors at water closet compartments for handicapped users.
 2. Pilasters: Adjustable, 1 inch thick; provide overhead headrail bracket.
 3. Fasteners: Stainless steel 1/4 inch tamper proof shoulder screws and barrel nuts.
 4. #14 Screw: Stainless steel #14 x 1-1/2 inch screw used along with expansion anchors for attachments to floor and building walls.
 5. Headrail: Extruded anodized aluminum headrail with anti-grip profile. Clamps around pilaster and is secured to the wall with stainless steel brackets.
 6. End Cap: Aluminum cap fastened to the ends of headrail bracing.
 7. Headrail Bracket: 16 gauge stainless steel used to connect headrail bracing.
 8. Door Pull: Heavy duty Zamac chrome-plated used on outswinging doors only. Provide on inside and outside of door.
 9. Latch and Keeper: Surface-mounted slide latch with flat rubber-faced combination door strike and keeper, meeting requirements for accessibility at accessible compartments.
 10. Bumper/Coat Hook: Combination hook and rubber-tipped stop, sized to prevent door from hitting compartment-mounted accessories. Provide wall bumper where door abuts wall. Provide formed L-shaped hook without stop at outswing doors.
 11. Door Stop: Zamac chrome-plated used on out swinging doors only as a stop.
 12. Brackets: Full height continuous, extruded aluminum.
 13. Hinges: : Self-closing 8" wraparound type adjustable to hold doors open at any angle up to 90 degrees, with emergency access by lifting door.
 14. Shoes: 4 inches (76 mm) high minimum, 300 series stainless steel with No. 4 satin brushed finish.

2.4 FINISHES

- A. Colors to be selected by Architect from manufacturer's full range of colors. Provide for two colors. One for doors (S203 Deep Blue) and one for remainder of pieces (S406 Desert Stone). Stainless steel items shall have a polished finish.
 - 1. Aluminum items shall have a natural color anodized finish.
 - 2. Chrome plated items shall have a polished finish.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Comply with manufacturer's recommended procedures and installation sequence. Install partitions rigid, straight, plumb, and level. Provide clearances of not more than 1/2" between pilasters and panels, and not more than 1" between panels and walls. Secure panels to walls with not less than two stirrup brackets attached near top and bottom of panel. Locate wall brackets so that holes for wall anchorages occur in masonry or tile joints. Secure panels to pilasters with not less than two stirrup brackets located to align with stirrup brackets at wall. Secure panels in position with manufacturer's recommended anchoring devices.
- B. Overhead-Braced Partitions: Secure pilasters to floor and level, plumb, and tighten installation with devices furnished. Secure overhead-brace to each pilaster with not less than two fasteners. Hang doors and adjust so that tops of doors are parallel with overhead-brace when doors are in closed position.
- C. Screens: Attach with concealed anchoring devices, as recommended by manufacturer to suit supporting structure. Set units to provide support and to resist lateral impact.

3.2 ADJUST AND CLEAN

- A. Hardware Adjustment: Adjust and lubricate hardware for proper operation. Set hinges on inswinging doors to hold open approximately 30 degrees from closed position when unlatched. Set hinges on outswinging doors (and entrance swing doors) to return to fully closed position.
- B. Clean exposed surfaces of partition systems using materials and methods recommended by manufacturer, and provide protection as necessary to prevent damage during remainder of construction period.

END OF SECTION 10 21 14

SECTION 10 28 00 - TOILET AND BATH ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes toilet and bath accessory items as scheduled.

1.3 SUBMITTALS

- A. General: Submit the following according to Conditions of Contract and Division 01 Specifications Sections.
- B. Product data for each toilet accessory item specified, including construction details relative to materials, dimensions, gages, profiles, mounting method, specified options, and finishes.

1.4 QUALITY ASSURANCE

- A. Inserts and Anchorages: Furnish accessory manufacturers' standard inserts and anchoring devices that must be set in concrete or built into masonry. Coordinate delivery with other work to avoid delay.
- B. Single-Source Responsibility: Provide products of same manufacturer for each type of accessory unit and for units exposed to view in same areas, unless otherwise acceptable to Architect.

1.5 PROJECT CONDITIONS

- A. Coordination: Coordinate accessory locations, installation, and sequencing with other work to avoid interference with and ensure proper installation, operation, adjustment, cleaning, and servicing of toilet accessory items.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering toilet accessories that may be incorporated in the Work include, but are not limited to, the following:
1. Bradley Corporation.
 2. American Specialties, Inc.
 3. Bobrick Washroom Equipment, Inc.
 4. Brey Krause Manufacturing Co.

2.2 MATERIALS, GENERAL

- A. Stainless Steel: AISI Type 302/304, with polished No. 4 finish, **0.034 inch (0.9 mm)** minimum thickness.
- B. Brass: Leaded and unleaded, flat products, ASTM B 19; rods, shapes, forgings, and flat products with finished edges, **ASTM B 16 (ASTM B 16M)**; Castings, ASTM B 30.
- C. Sheet Steel: Cold-rolled, commercial quality **ASTM A 366 (ASTM A 366M)**, **0.04 inch (1.0 mm)** minimum. Surface preparation and metal pretreatment as required for applied finish.
- D. Galvanized Steel Sheet: **ASTM A 527 G60 (ASTM A 527M Z180)**.
- E. Chromium Plating: Nickel and chromium electro-deposited on base metal, ASTM B 456, Type SC 2.
- F. Baked Enamel Finish: Factory-applied, gloss white, baked acrylic enamel coating.
- G. Mirror Glass: Nominal 6.0 mm thick, conforming to ASTM C 1036, Type I, Class 1, Quality q2, and with silvering, electro-plated copper coating, and protective organic coating. Provide tempered glass at all mirrors.
- H. Galvanized Steel Mounting Devices: ASTM A 153, hot-dip galvanized after fabrication.
- I. Fasteners: Screws, bolts, and other devices of same material as accessory unit, or of galvanized steel where concealed.

2.3 TOILET TISSUE DISPENSERS

- A. Roll-In-Reserve Dispenser: Fabricate of stainless steel for mounting indicated below, size to store and dispense either **4-1/2 inch (113 mm)** diameter or **5 inch (125 mm)** diameter core tissue rolls,

with reserve roll placed in service by automatic release or by action of manual release bar. Hinge front of unit with pivot hinge and secure with tumbler lockset.

1. Mounting: Surface mounted, concealed anchorage.
 2. Mounting: Partition mounted, designed to serve two adjacent toilet compartments, two rolls for each.
 3. Bradley Models: B438 and B386
 4. American Specialties:
 5. Bobrick:
 6. Brey Krause:
- B. Roll-In-Reserve Dispenser & Sanitary Napkin Disposal: Fabricate of stainless steel for mounting indicated below, size to store and dispense either **4-1/2 inch (113 mm)** diameter or **5 inch (125 mm)** diameter core tissue rolls, with reserve roll placed in service by automatic release or by action of manual release bar. Hinge front of unit with pivot hinge and secure with tumbler lockset.
1. Mounting: Surface mounted, concealed anchorage.
 2. Mounting: Partition mounted, designed to serve two adjacent toilet compartments, two rolls for each.
 3. Bradley Models: B3094
 4. American Specialties:
 5. Bobrick:
 6. Brey Krause:

2.4 COMBINATION TOWEL DISPENSER/WASTE RECEPTACLE UNITS

- A. Semi-Recessed Unit: Stainless steel combination unit fabricated for nominal 4-inch wall depth with continuous, seamless wall flange. Towel compartment in upper portion of unit designed to dispense not less than 600 C-fold or 800 multifold paper towels. Waste receptacle in lower portion of unit provided with reusable, heavy-duty vinyl liner, minimum **4 gallon (15 L)** capacity. Provide flush doors with piano hinges and tumbler locks on upper and lower compartments.
1. Bradley Model #B-3944.
 2. American Specialties:
 3. Bobrick:

4. Brey Krause:

2.5 GRAB BARS

- A. Stainless Steel Type: Provide grab bars with wall thickness not less than **0.05 inch (1.3 mm)** and as follows:
 1. Mounting: Concealed, manufacturer's standard flanges and anchorages.
 2. Clearance: **1-1/2 inch (38 mm)** clearance between wall surface and inside face of bar.
 3. Gripping Surfaces: Manufacturer's standard nonslip texture.
 4. Heavy-Duty Size: Outside diameter of **1-1/2 inches (38 mm)**

2.6 MISCELLANEOUS ACCESSORIES

- A. Mop and Broom Holder/Utility Shelf: Combination unit with **0.05 inch (1.3 mm)**, Type 304, stainless steel shelf with **2 inch (13 mm)** returns, **0.062 inch (1.6 mm)** support brackets for wall mounting. Provide **0.062 inch (1.6 mm)** stainless steel hooks for wiping rags on front of shelf, together with spring-loaded, rubber hat, cam-type mop/broom holders; **1/4 inch (6 mm)** diameter stainless steel drying rod suspended beneath shelf. Provide unit **34 inches (850 mm)** long and complete with four mop/broom holders and four hooks.
 1. Bradley Model B239 x 34.
 2. American Specialties:
 3. Bobrick:
 4. Brey Krause:
- B. Single Robe Hooks: Front Mounted, Stainless Steel, Bradley Model No. B211
 1. American Specialties:
 2. Bobrick:
 3. Brey Krause:

2.7 MIRROR UNITS

- A. Fixed Tilted Stainless Steel Framed Mirror Units: Fixed tilt mirror shall be framed with type 304 (18-8), 20 gauge stainless steel with 20 gauge concealed stiffeners with a 4" top projection. Welded corners shall be polished to a uniform satin finish. Mirror shall be of first quality 1/4" tempered glass

guaranteed for 15 years against silver spoilage and protected by a shock absorbing, waterproof foam filler with Poly-Glaze protective finish. Back of unit shall be galvanized steel secured to frame with concealed screws, equipped with integral horizontal hanging brackets and separate wall hanger for concealed mounting.

1. Bradley Model 740, size 18" x 30"w
2. American Specialties:
3. Bobrick:
4. Brey Krause:

2.8 BABY CHANGING STATION

- A. Baby changing station body shall be durable, high-impact polyethylene. Design of unit shall be surface-mounted. Unit shall be equipped with a pneumatic cylinder for controlled opening and closing of bed. Bed shall be secured to back plate with a concealed, full-length steel-on-steel hinge. No hinge structure shall be exposed on interior or exterior surfaces. Unit shall have 11-gauge steel mounting plates with mounting hardware included. Unit shall conform to ANSI S117.1, ASTM PS 125 (federal regulation compliance, load support, pinch points, child restraint), ANSI Z535.4, R-0367 German TUV or local code if more stringent installation requirements are applicable for handicapped accessibility. Unit shall comply with ADA regulations when properly installed. Bed shall have smooth concave changing area with a nylon safety strap and two hooks for bags or purses. Unit shall have a built-in Liner Dispenser for use with 3-ply chemical free biodegradable sanitary liners, universal instruction graphics and safety messages in 6 languages. Manufacturer's service and parts manual shall be provided to the building owner/manager upon completion of project. Unit shall be backed by manufacturers 5-year limited warranty on materials and workmanship, or 5-year replacement warranty against vandalism. Unit shall be manufactured in the U.S.A.
- B. Baby Changing Station shall be model KB100-00, KB100-01, or KB100-05 of Koala Kare Products, A Division of Bobrick, or approved equal.
 1. American Specialties:
 2. Bradley:
 3. Brey Krause:

2.9 WARM-AIR DRYERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 1. Basis-of-Design Product: Bradley Model 2922, or approved equal.
 2. Mounting: Surface mounted.
 3. Operation: Touch-button activated with timed power cut-off switch.

a. Operation Time: 80 seconds.

4. Cover Material and Finish: Stainless steel, satin finish.

2.10 FABRICATION

- A. General: Only a maximum **1-1/2 inch (38 mm)** diameter, unobtrusive stamped manufacturer logo, as approved by Architect, is permitted on exposed face of toilet or bath accessory units. On either interior surface not exposed to view or back surface, provide additional identification by either a printed, waterproof label or a stamped nameplate, indicating manufacturer's name and product model number.
- B. General: No names or labels are permitted on exposed faces of toilet and bath accessory units. On either interior surface not exposed to view or on back surface, provide identification of each accessory item either by a printed, waterproof label or a stamped nameplate indicating manufacturer's name and product model number.
- C. Surface-Mounted Toilet Accessories, General: Except where otherwise indicated, fabricate units with tight seams and joints, exposed edges rolled. Hang doors or access panels with continuous stainless steel piano hinge. Provide concealed anchorage wherever possible.
- D. Recessed Toilet Accessories, General: Except where otherwise indicated, fabricate units of all-welded construction, without mitered corners. Hang doors or access panels with full-length, stainless steel piano hinge. Provide anchorage that is fully concealed when unit is closed.
- E. Framed Mirror Units, General: Fabricate frames for glass mirror units to accommodate wood, felt, plastic, or other glass edge protection material. Provide mirror backing and support system that will permit rigid, tamperproof glass installation and prevent moisture accumulation, as follows:
1. Provide galvanized-steel backing sheet, not less than **0.034 inch (0.9 mm)** and full mirror size, with nonabsorptive filler material. Corrugated cardboard is not an acceptable filler material.
- F. Mirror Unit Hangers: Provide system for mounting mirror units that will permit rigid, tamperproof, and theftproof installation, as follows:
1. One-piece, galvanized-steel, wall-hanger device with spring-action locking mechanism to hold mirror unit in position with no exposed screws or bolts.
 2. Heavy-duty wall brackets of galvanized steel, equipped with concealed locking devices requiring a special tool to remove.
- G. Keys: Provide universal keys for access to toilet accessory units requiring internal access for servicing, resupply, etc. Provide minimum of six keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install toilet accessory units according to manufacturers' instructions, using fasteners appropriate to substrate as recommended by unit manufacturer. Install units plumb and level, firmly anchored in locations and at heights indicated.
- B. Secure mirrors to walls in concealed, tamperproof manner with special hangers, toggle bolts, or screws. Set units plumb, level, and square at locations indicated, according to manufacturer's instructions for type of substrate involved.
- C. Install grab bars to withstand a downward load of at least **250 lbf (1100 N)**, complying with ASTM F 446.

3.2 ADJUSTING AND CLEANING

- A. Adjust toilet accessories for proper operation and verify that mechanisms function smoothly. Replace damaged or defective items.
- B. Clean and polish all exposed surfaces strictly according to manufacturer's recommendations after removing temporary labels and protective coatings.

END OF SECTION 10 28 00

SECTION 10 44 16 - FIRE EXTINGUISHERS, CABINETS, AND ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Fire extinguishers.
 - 2. Fire extinguisher cabinets.
- B. Related Sections include the following:
 - 1. Division 07 Section "Joint Sealants"

1.3 SUBMITTALS

- A. General: Submit the following according to the Conditions of the Contract and Division 01 Specification Sections.
- B. Product data for cabinets include rough-in dimensions, details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type and materials, trim style, door construction, panel style, and materials.
- C. Samples for initial selection purposes in the form of manufacturer's color charts consisting of actual units or sections of units showing full range of colors, textures, and patterns available for each type of cabinet finish indicated or exposed to view.
- D. Submit Cabinet Manufacturer's name, address and cabinet model number as part of close-out submission package

1.4 QUALITY ASSURANCE

- A. Single-Source Responsibility: Obtain extinguishers and cabinets from one source from a single manufacturer.

- B. Coordination: Verify that cabinets are sized to accommodate type and capacity of extinguishers indicated and provided by Owner under separate Contract.
- C. UL-Listed Products: Fire extinguishers shall be UL listed with UL listing mark for type, rating, and classification of extinguisher.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - 1. Larsen's Manufacturing Co.
 - 2. Lyon Metal Products.
 - 3. J.L. Industries.

2.2 FIRE EXTINGUISHERS

- A. General: Provide fire extinguishers for each cabinet and other locations indicated, in colors and finishes selected by Architect from manufacturer's standard, that comply with authorities having jurisdiction.
- B. Multipurpose Dry Chemical Type: UL-rated 2-A:10:B:C, 5-lb nominal capacity, in enameled steel container.

2.3 CABINETS

- A. Construction: Manufacturer's standard box, with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated. Weld joints and grind smooth. Miter and weld perimeter door frames.
- B. Fire-Rated Cabinets: UL listed with UL listing mark with fire-resistance rating of wall where it is installed. Provide at all rated walls.
- C. Cabinet Type: Suitable for containing the following:
 - 1. Fire extinguisher.
- D. Cabinet Mounting: Suitable for the following mounting conditions:
 - 1. Semi-recessed: Cabinet box (tub) partially recessed in walls of shallow depth.

- E. Trim Style: Fabricate trim in one piece with corners mitered, welded, and ground smooth.
 - 1. Exposed Trim: One-piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and wall return at outer edge (backbend).
 - a. Square-edge trim with 1/4- to 5/16-inch backbend depth.
 - b. Trim Metal: Of same metal and finish as door.
- F. Door Material and Construction: Manufacturer's standard door construction, of material indicated, coordinated with cabinet types and trim styles selected.
 - 1. Enameled Steel: Manufacturer's standard finish, hollow steel door construction with tubular stiles and rails.
 - 2. Door Glazing: Fully tempered float glass complying with ASTM C 1048, Condition A, Type I, Quality q3, Kind FT, Class as follows:
 - a. Class 1 (clear).
- G. Identify fire extinguisher in cabinet with FIRE EXTINGUISHER lettering applied to door. Provide lettering to comply with authorities having jurisdiction for letter style, color, size, spacing, and location.
 - 1. Application Process: Silk screen.
- H. Door Style: Manufacturer's standard design.
 - 1. Duo Panel: Tempered glass, 1/8 inch thick.
- I. Door Hardware: Provide manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated. Provide either lever handle with cam-action latch, or exposed or concealed door pull and friction latch. Provide concealed or continuous-type hinge permitting door to open 180 deg.

2.4 FINISHES FOR CABINETS, GENERAL

- A. Comply with NAAMM "Metal Finishes Manual" for recommendations relative to applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying temporary strippable protective covering prior to shipping.

2.5 STEEL CABINET FINISHES

- A. Surface Preparation: Solvent-clean surfaces complying with SSPS-SP 1 to remove dirt, oil, grease, and other contaminants that could impair paint bond. Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5 (white metal blast cleaning) or SSPC-SP 8 (pickling).

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine walls and partitions for thickness and framing for cabinets to verify cabinet depth and mounting prior to cabinet installation.
- B. Do not proceed until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Follow manufacturer's printed instructions for installation.
- B. Install in locations, square and plumb, and at mounting heights indicated or, if not indicated, at heights to comply with applicable regulations of governing authorities.
 - 1. Prepare recesses in walls for cabinets as required by type and size of cabinet and style of trim and to comply with manufacturer's instructions.
 - 2. Fasten mounting brackets and cabinets to structure, square and plumb.

END OF SECTION 10 44 16

SECTION 10 51 26 – SOLID PLASTIC LOCKERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. A. This Section includes the following:
 - 1. Lockers, including the following:
 - a. Five Tier 12 x 12 x 72
 - b. Two Tier 12 x 18 x 72
 - 2. Locker room benches.
 - 3. ADA Locker room benches

1.3 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 01 Specification Sections.
- B. Product Data: Manufacturer's printed data including materials, accessories, construction, finishes, assembly, and installation instructions for lockers and benches.
- C. Shop Drawings: Layout and dimensions of metal lockers and benches. Indicate relationship to adjoining surfaces. Show locker elevations and details, fillers, trim, base, sloping tops, and accessories. Include locker numbering sequence. Indicate installation and anchorage requirements.
- D. Samples for Initial Color Selection: Manufacturer's color charts showing a full range of available colors.

1.4 QUALITY ASSURANCE

- A. Single-Source Responsibility: Obtain locker units and accessories from one manufacturer.
- B. Factory assembled.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver lockers until spaces to receive them are clean, dry, and ready for locker installation.
- B. Protect lockers from damage during delivery, handling, storage, and installation.
- C. Store locker components upright until installation.
- D. Deliver master keys, control keys, and combination control charts to Owner.

1.6 WARRANTY

- A. Provide manufacturer standard warranty stating products to be free from manufacturing defects in workmanship or material for a period of fifteen (15) years from the date of installation and against breakage, delamination or rust.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
 - 1. Bradley, Lenox, Basis of Design
 - 2. Scranton Products (Santana/Comtec/Capitol)

2.2 MATERIALS

- A. General: Components shall be constructed from High Density Polyethylene (HDPE) resins. Components shall be fabricated from polymer resins compounded under high pressure, forming a single component which is waterproof, nonabsorbent and has a self-lubricating surface that resists marks from pens, pencils, markers and other writing instruments. All plastic components shall be covered with a protective plastic masking.
- B. Fasteners: Stainless steel; slotless-type exposed bolt heads; self-locking nuts or lock washers for nuts on moving parts.
- C. Equipment: Manufacturer's standard plated steel hooks or coat rods.

2.3 LOCKERS

- A. Sides, Shelves, Tops and Bottoms: Shall be manufactured from solid polymer resin (HDPE) with homogenous resin to form plastic components ½" thick.

- B. Doors: Shall be manufactured from solid polymer resin (HDPE) with homogenous resin to form plastic components ½” thick.
- C. Door Frames: Shall be manufactured from solid polymer resin (HDPE) with homogenous resin to form plastic components ½” thick.
- D. Continuous Latch: Shall be a spring-loaded, slide latch mechanism attached to the door providing a continuous security latch.
- E. Door Hinge: Provide aluminum powder coated continuous hinge integrated into the full length of the door and frame.
- F. Louvered Vents: Manufacturer’s standard, louvered vents in door face.
- G. Handle and Latch: Manufacturers' standard for latch lifter and locking devices containing strike and eye for padlock; and automatic, prelocking, pry-resistant latch mechanism.

2.4 LOCKS

- A. Fabricate lockers to receive the following locking devices:
 - 1. Two Tier Lockers : Padlock hasp locks
 - 2. Five Tier Lockers: Built-in, coin operated function, master keyed

2.5 LOCKER ACCESSORIES

- A. Equipment: Furnish each locker with the following items, unless otherwise shown:
 - 1. Two-Tier Units: 1 double-prong ceiling hook, and not fewer than 2 single-prong wall hooks.
- B. Number Plates: Manufacturer's standard etched, embossed, or stamped, nonferrous-metal number plates with numerals not less than 3/8 inch (9 mm) high. Number lockers in sequence indicated. Attach plates to each locker door, near top, centered, with at least 2 fasteners of same finish as number plate.
- C. Continuously Sloping Tops: Manufacturer's standard continuously sloped top, not less than ½” solid plastic panels. Provide closures at ends and sloped corner fillers, and finished to match lockers.
- D. Recess Trim: Manufacturer's standard, not less than ½” solid plastic panels with concealed fastening clips, and finished to match lockers.
- E. Filler Panels: Manufacturer's standard, not less than ½” solid plastic panels with concealed fastening clips, and finished to match lockers.
- F. Exposed End Panels: Manufacturer's standard, not less than ½” solid plastic panels with concealed fastening clips, and finished to match lockers.

- G. Continuous Base (Existing Building): Minimum **1 inch** thick solid plastic (HDPE), fabricated in lengths as long as practicable to enclose base and base ends of lockers, and finished to match lockers.

1. Height: 4 inches, with 2" toe space.

2.6 LOCKER BENCHES

- A. Bench Tops: Manufacturer's standard 1-piece units with laminated maple top approximately 9-1/2 inches (240 mm) wide by 1-1/4 inches (32 mm) thick. Round all corners, sand smooth, and apply manufacturer's standard transparent sealer coating.

- B. Pedestals: Manufacturer's standard steel pedestal supports. Furnish all fastenings and anchorages. Apply manufacturer's standard baked-enamel finish to pedestals.

1. Type: Manufacturer's standard heavy-duty pedestal with top flange and base, floor anchored.
2. Color: To match locker units.

2.7 LOCKER BENCHES

- A. Bench Tops: Manufacturer's standard 1-piece units with laminated maple top approximately 20 inches (240 mm) wide by 1-1/4 inches (32 mm) thick. Round all corners, sand smooth, and apply manufacturer's standard transparent sealer coating.

- B. Bench Backs: Manufacturer's standard 1-piece units with laminated maple back. Round all corners, sand smooth, and apply manufacturer's standard transparent sealer coating.

- C. Pedestals: Manufacturer's standard steel pedestal supports. Furnish all fastenings and anchorages. Apply manufacturer's standard baked-enamel finish to pedestals.

1. Type: Manufacturer's standard heavy-duty pedestal with top flange and base, floor anchored.
2. Color: To match locker units.

2.8 FINISHES, GENERAL

- A. Finish shall be commercial grade matte finish for tops, bottoms, side-walls, shelves and backs shall be natural white. Doors and frames shall have slightly textured finish.

- B. Protect finishes on exposed surfaces from damage by applying strippable, temporary protective covering prior to shipment.

- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within 2 of the range of approved samples. Noticeable variations in the same

piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved samples and they are assembled or installed to minimize contrast.

- D. Color: As selected by Architect from manufacturer's full range of choices for color. Five tier lockers to have two colors (doors S203 Deep Blue and frames S406 Desert Stone) and two tier lockers to be one color (S203 Deep Blue).

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install factory assembled solid plastic lockers complete with accessories according to manufacturer's current printed instructions and recommendations. Install plumb, level, rigid, and flush.
- B. Anchor lockers to floors and walls at intervals recommended by manufacturer but no greater than **36 inches (910 mm)**. Install anchors through back-up reinforcing plates where necessary to avoid distortion, using concealed fasteners.
- C. Install recess trim to recessed lockers using concealed fasteners. Provide hairline joints and concealed splice plates.
- D. Install sloping top units to lockers using concealed fasteners. Provide hairline joints and concealed splice plates.
- E. Install locker benches complying with manufacturer's instructions.
 - 1. Uniformly space pedestals not more than 72 inches (1830 mm) apart. Securely fasten to bench top and anchor to floor.

3.2 ADJUSTING, CLEANING, AND PROTECTION

- A. Adjust doors and latches to operate easily without binding. Verify that integral locking devices are operating properly.
- B. Clean interior and exposed exterior surfaces and polish all surfaces.
- C. Protect lockers from damage, abuse, dust, dirt, stain, or paint. Do not permit locker use during construction.
- D. Touch up marred finishes, or replace locker units that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by locker manufacturer.

END OF SECTION 10 51 26

SECTION 13 12 15 – EXTERIOR WATER PLAY EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Exterior Water Play Equipment, some items purchased by owner and installed by contractor, coordinate with drawings.
 - 2. Attached manufacturer's system and product specification and equipment sheets, 98 pages

1.3 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 01 Specification Sections.
- B. Product data including manufacturer's technical data, installation instructions and general recommendations for each product specified. Include data substantiating that materials and performance comply with requirements.
- C. Shop Drawings including elevations, plan view, sections, and details showing materials to be used, attachment methods, and flashing requirements.

1.4 QUALITY ASSUARANCE

- A. Manufacturers Qualifications
- B. Ten years minimum experience in fabrication of water play specialties.

1.5 JOB CONDITIONS

- A. Coordinate work of this Section with adjoining work for proper sequencing of each installation to ensure best possible weather resistance and protection of materials and finishes against damage.

1.6 WARRANTY

- A. Provide manufactures standard warranty for each product as outlined in the attached document.

PART 2 - PRODUCTS

2.1 MANUFACTURER:

- A. Rain Drop Products, basis of design.

2.2 MATERIALS AND EQUIPMENT

- A. Provide a complete “water play” system and installation as outlined in the attached manufacturer’s system and product specification and equipment sheets, 103 pages. Some items purchased by owner and installed by contractor, coordinate with drawings.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Comply with manufacturer's written installation instructions and recommendations. Coordinate with installation of substrates to receive work of this Section, with other construction, as required to ensure that each element of the work performs properly, and that combined elements are operational. Anchor products included in this Section securely to structural substrates, adequate to withstand lateral and thermal stresses as well as inward and outward loading pressures.

3.2 CLEANING AND PROTECTION

- A. Clean exposed surfaces in accordance with manufacturer's instructions. Touch-up damaged metal coatings.
- B. Protection: Provide protective measures as required to ensure that work of this Section will be without damage or deterioration at time of substantial completion.

END OF SECTION 13 12 15



SUBMITTAL PACKAGE

WHEELER PARK

Linden, NJ
Project # 1179423



To view product images online, please click on the [blue link](#) and you will be taken to the appropriate product location.

TRCH-001-OM

TREASURE CHEST40" X 24" X 30"-OMNI

<https://www.dropbox.com/s/j0u2jhqazuedp5v/TRCH-001-OM-ZCS.pdf?dl=0>

MNSH-001-OM

MINI PIRATE SHIP SLIDE-OMNI

<https://www.dropbox.com/s/hv0c0wjub694g42/MNSH-001-OM-ZCS.pdf?dl=0>

PAD-6X8

PAD-6X8 SLIDE EXIT PAD

https://www.dropbox.com/s/fx580pw6wakpexv/PAD-6X8_PDF.pdf?dl=0

BLSJ-005-OM

BELLE SPRAY JET-OMNI

<https://www.dropbox.com/s/dducpgfgc3k0ao9/BLSJ-005-OM-ZCS.pdf?dl=0>

CFSC-001-OM

CREATURE FEATURE-CROCODILE STEVE-OMNI

<https://www.dropbox.com/s/40ov58eaf3qus5v/CFSC-001-OM-ZCS.pdf?dl=0>

/CFSK-001-OM

CREATURE FEATURE-AQUA SHARK

<https://www.dropbox.com/s/8q9og5ipspvxwn0/CFSK-001-OM-ZCS.pdf?dl=0>

WAVE-001-OM

BIG KAHUNA WAVE-OMNI

<https://www.dropbox.com/s/n00pc5f432z3o86/WAVE-001-OM-ZCS.pdf?dl=0>

PFPC-012-OM

PIPE FALLS PLAY CENTER-WITH SAIL-OMNI

<https://www.dropbox.com/s/wctc0kp0j2wqt8d/PFPC-012-OM-ZCS.pdf?dl=0>

RNDP-001-MF-OM

RAIN DROP-MYSTICAL FUN-OMNI

<https://www.dropbox.com/s/k1axt77uwycc44d/RNDP-001-MF-OM-ZCS.pdf?dl=0>

PLCN-002-OM

PELICAN ON SQUARE MARKER CANNON-OMNI

<https://www.dropbox.com/s/bakkasrqbiptk50/PLCN-002-OM-ZCS.pdf?dl=0>

/CFST-003-OM

CF-SEBASTIAN STAR-OMNI

<https://www.dropbox.com/s/d28bs481zli3wzp/CFST-003-OMS-ZCS.pdf?dl=0>

/TSBC-001-OM

THEME SPRAY-BEACH BUCKET-OM

<https://www.dropbox.com/s/2v5ryli18svcruj/TSBC-001-OM-ZCS.pdf?dl=0>

ARJT-007-OM
ARCH JET WITH SIGN-OMNI
<https://www.dropbox.com/s/6s0w732gdipi0de/ARJT-007-OM-ZCS.pdf?dl=0>

SRFB-001-OM
SURF'S UP BOARDS OMNI
<https://www.dropbox.com/s/23kewmv1eevih8r/SRFB-001-OM-ZCS.pdf?dl=0>

PLCN-001-OM
PELICAN ON TRIANGLE MARKER CANNON-OMNI
<https://www.dropbox.com/s/jqu1gnwt0xzcouk/PLCN-001-OM-ZCS.pdf?dl=0>

/DGSL-001
DRAGON SLIDE W/ HEAD BODY TAIL
<https://www.dropbox.com/s/17molrctn8q19qv/DGSL-001-ZCS.pdf?dl=0>

PAD-3X8
PAD-3X8 EXIT SLIDE PAD
<https://www.dropbox.com/s/8sux8mb6lyveuge/3%20x%208%20copy.pdf?dl=0>

/CFSU-001-OM
CF-SUNBATH-UPSTREAM-OMNI
<https://www.dropbox.com/s/4oji8iygru2osoo/CFSU-001-OM-ZCS.pdf?dl=0>

/LKBN-006-OM
LEAKIN BEACON W/3 TIPPING BKTS
<https://www.dropbox.com/s/cboihhc5kp8u1ye/LKBN-006-OM-ZCS.pdf?dl=0>

BCHSPN-001-OM
BEACH BALL SPINNER-OMNI
<https://www.dropbox.com/s/7tq3kq42rpm5cgd/BCHSPN-001-OM-ZCS.pdf?dl=0>

/SBUS-002
SURFER BUS-FULL SIZED
<https://www.dropbox.com/s/lmfdfn1rlnfoci/SBUS-002-ZCS.pdf?dl=0>

/PLMT-006
STD PALM-2 EYELETS-NO SPRAYS
<https://www.dropbox.com/s/dbv7g8kt753dxeb/PLMT-006-ZCS.pdf?dl=0>

WHHD-004-OM
WHALE HEAD LOW PROFILE MEDIUM
<https://www.dropbox.com/s/d9p5asc541mr50/WHHD-004-OM-ZCS.pdf?dl=0>

MONSOON1-201
MONSOON1-201 MINI SURF SHACK
<https://www.dropbox.com/s/jvqv718ichgdh/MONSOON1-201-ZCS.pdf?dl=0>

WHTL-004-OM
WHALE TAIL-LR-LIFE SIZE-OMNI
<https://www.dropbox.com/s/dpmm77fytmxzep1/WHTL-004-OM-ZCS.pdf?dl=0>

SSCN-001-OM
ELEVATED SERPENT CANNON-OMNI
<https://www.dropbox.com/s/cy1nsyuu3plcwmm/SSCN-001-OM-ZCS.pdf?dl=0>

/SPSF-001-OM
SPINNING STARFISH-OMNI
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/SPCR-001-OM
SPINNING CRAB-OMNI
<https://www.dropbox.com/s/xve58sd810jryia/SPCR-001-OM-ZCS.pdf?dl=0>

WFCN-017-OM
TURTLE WATER CANNON-OMNI
<https://www.dropbox.com/s/c3z83zqgox5kc2h/WFCN-017-OM-ZCS.pdf?dl=0>

WFCN-023-OM
TROPICAL FISH CANNON-OMNI
<https://www.dropbox.com/s/54xtfxzeqw9kwxm/WFCN-023-OM-ZCS.pdf?dl=0>

PLMT-005-OM
PALM TREE SWANKY-OMNI
<https://www.dropbox.com/s/p2bxep6w52nxhmr/PLMT-005-OM-ZCS.pdf?dl=0>

WFCN-014-OM
CITY WALL CANNON W/ BUTTON-OMNI
<https://www.dropbox.com/s/tpkki7zs5e6p663/WFCN-014-OM-ZCS.pdf?dl=0>

/CFFN-001-OM
CREATURE FEATURE-SHARK FIN
<https://www.dropbox.com/s/92k3hvcxys4wtus/CFFN-001-OM-ZCS.pdf?dl=0>

SHWT-004
SHOWER TUNNEL
<https://www.dropbox.com/s/41k3xn9ngl8abm8/SHWT-004-ZCS.pdf?dl=0>

/SPBG-003
SPRAY BRIGADE-POPKORN
<https://www.dropbox.com/s/0jrhaci2s22tti/SPBG-003-ZCS.pdf?dl=0>

CIRT-012
CIRCLE TIME-12 OUTLET
<https://www.dropbox.com/s/mzwre1xk9rqdom5/CIRT-012-ZCS.pdf?dl=0>

SFJT-003-OM
SLANT FINGER JET-OMNI
<https://www.dropbox.com/s/nyy982c2jlmkooz/SFJT-003-OM-ZCS.pdf?dl=0>

FMGS-003
FOAM GEYSER
<https://www.dropbox.com/s/ncxp7wi8e8sz2od/FMGS-003-ZCS.pdf?dl=0>

TALP-001-OM
TALL TOOLIP SPRAY-OMNI
<https://www.dropbox.com/s/08yvwg7b7q9wene/TALP-001-OM-ZCS.pdf?dl=0>

TNAR-010
TUNNEL ARCH-8 OUTLETS
<https://www.dropbox.com/s/4a9zst2up5ergxo/TNAR-010-ZCS.pdf?dl=0>

PPJT-003
POP JET-MINI-4 OUTLET
<https://www.dropbox.com/s/xnxm5b8ln44t94m/PPJT-003-ZCS.pdf?dl=0>

PPJT-004
POP JET MINI-CURVED-4 OUTLET
<https://www.dropbox.com/s/u0je8qqaiml3vj2/PPJT-004-ZCS.pdf?dl=0>

GSJT-001-OM
GUSHER JET-OMNI
<https://www.dropbox.com/s/70l22kyp8bhcg22/GSJT-001-OM-ZCS.pdf?dl=0>

UPJT-007-OM
UPSTREAM JET-OMNI
<https://www.dropbox.com/s/ll2882xr6y6nic0/UPJT-007-OM-ZCS.pdf?dl=0>

POD-A001
OMNIPOD MOUNTING SYSTEM
<https://www.dropbox.com/s/066mf10an38lcvb/POD-A001-ZCS.pdf?dl=0>

BOL-004
BOLLARD ACTIVATOR
<https://www.dropbox.com/s/gnyako97k0osytb/BOL-004-ZCS.pdf?dl=0>

/RNMK-VFD-056
RAIN MAKER FOR VFD-56 OUTLET
<https://www.dropbox.com/s/wczaw4og0wnr7xv/Rain%20Maker%20Spec.pdf?dl=0>

MANIFOLD-6-24
6" MANIFOLD
<https://www.dropbox.com/s/3550cw40sqn64yz/MANIFOLD%20SPECIFICATION.pdf>

BFV-MFD-3
3" BUTTERFLY VALVE ASSY FOR MANIFOLD
<https://www.dropbox.com/s/3byx3en7s6a129j/BFV-MFD-3%20BUTTERFLY%20VALVE.pdf?dl=0>

BLV-MFD-UNN-2
2" BALL VALVE ASSEMBLY, TRUE UNION BALL VALVE FOR MANIFOLD
<https://www.dropbox.com/s/c4z9wl7ld8k3px2/ZAM-BLV-MFD-2.pdf>

SOL-MFD-RMK-UNN-2-DC

2" SOLENOID VALVE ASSEMBLY, TRUE UNION BALL VALVE-DC FOR RAIN MAKER

<https://www.dropbox.com/s/yu7t8psxh33394w/RDP%20Solenoid%20Valve.pdf>

PMP6-650-PK3-01

PUMP EQIP PAK, 6" MFD, 15HP-3PH-200/208V-60HZ, CSP-SERIES

<http://www.pentairpool.com/pdfs/CSPOM.pdf>

VFD-151230

VFD FOR SINGLE PHASE INPUT 15 HP 3PH 230V PUMP

<http://www.polyspede.com/pdf/spedestarb.pdf>

FLT-180PK1S

FILTER PAK-48" SAND FILTER W/DMJ-172-5HP-1PH-230V PUMP

<http://www.polyspede.com/pdf/spedestarb.pdf>

ZPP-SWT-004

SWITCH DISCONNECT 2HP 230V-1 PH-10-16 FLA

<https://www.dropbox.com/s/a5a8h2mew0b0wzr/Disconnect%20Switch.pdf?dl=0>

CHL-750PK1L

CHLORINATION PAK-LIQUID W/ CAT 2000 CHEM CONTROLLER

<https://www.dropbox.com/s/47pvoh8kf5x2aqm/www.hayward-commercial-pool.com-pdf-manuals-Manual-CAT2000.pdf.url>

http://www.uswatersystems.com/shop/product_images/45-spec.pdf

RSVR-F45-1-1-01

RSVR- FIBERGLASS-4500 GAL 1 DRN 1 SUCTION 1 OVERFLOW

<https://www.dropbox.com/s/eiji8xivyubwvtj/RSVR-F45-3-2-01.pdf?dl=0>

DRN12-002

12"X12" BOX DRAIN

<https://www.dropbox.com/s/9gfzp3qamuca5lc/DRN12-002-ZCS.pdf?dl=0>

Rain Drop Products Warranty: <https://www.dropbox.com/s/Oy7p6mm5m33lid6/Warranty.pdf>

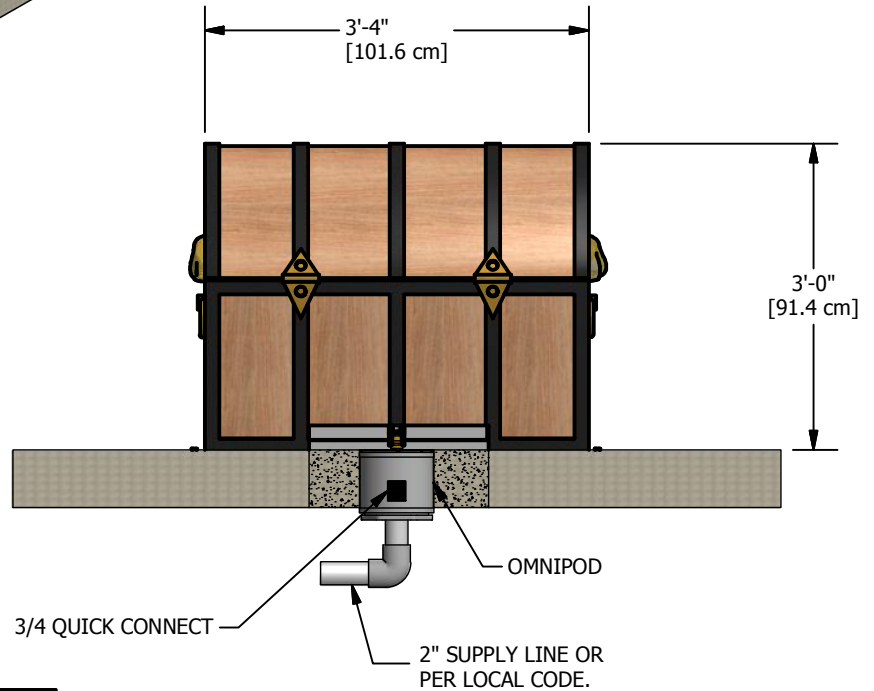
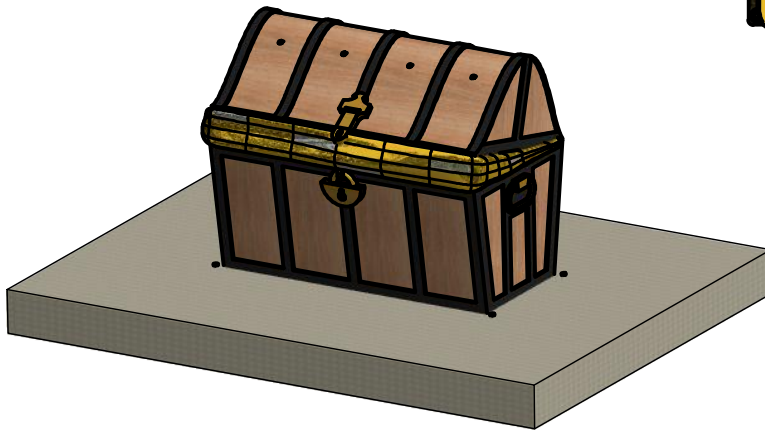
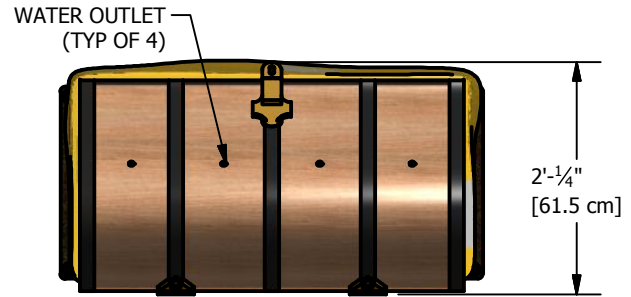
2

1

AREA OF INFLUENCE:
8' L X 6' W
VARIES WITH FLOW

NOTE:

- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 20.7 GPM.
- #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
- #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.
- #4 SUPPLY LINE TO BE SOLVENT WELDED TO OMNIPOD FEATURE RECIEVER.
- #5 CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.



INTENDED FLOW	15.2 GPM
GPM OPERATION RANGE	9.6 GPM TO 20.7 GPM
HEAD	8'
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	Yes
NUMBER OF PEOPLE TO INSTALL	1
MANHOURS TO INSTALL	1

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PRODUCT NAME
TREASURE CHEST, OMNI

SHEET 1 OF 1

PRODUCT PART #
TRCH-001-OM

REV
1

2

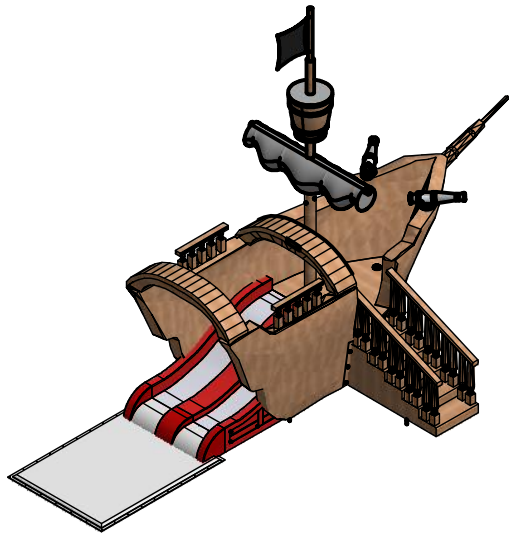
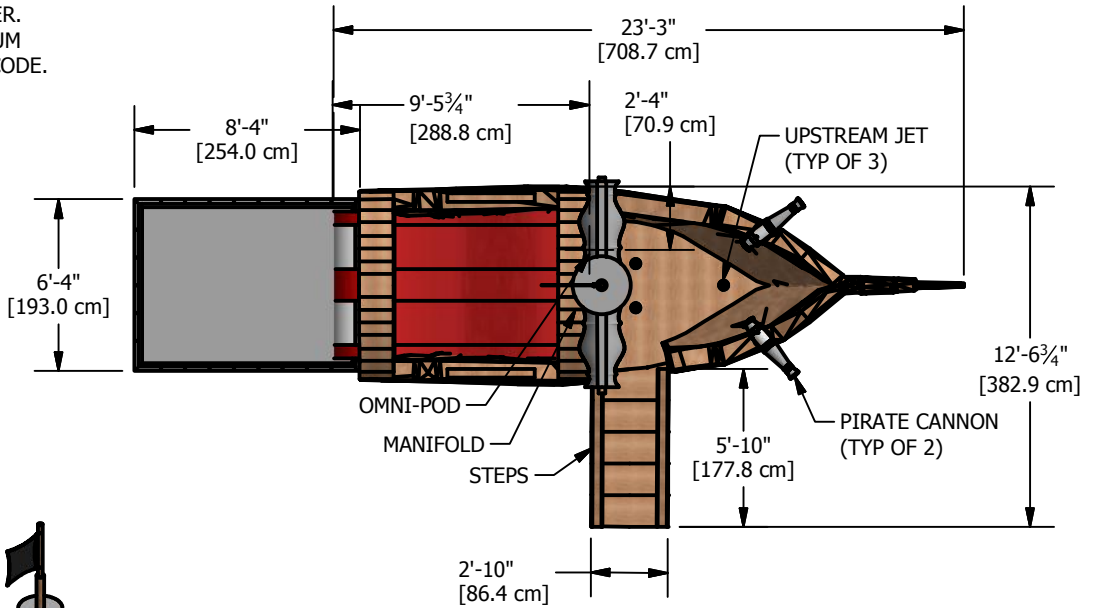
1

- NOTE:
- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 101.6 GPM.
 - #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
 - #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.
 - #4 SUPPLY LINE TO BE SOLVENT WELDED TO OMNIPOD FEATURE RECIEVER.
 - #5 CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.

AREA OF INFLUENCE:
30' L X 15' W
VARIES WITH FLOW

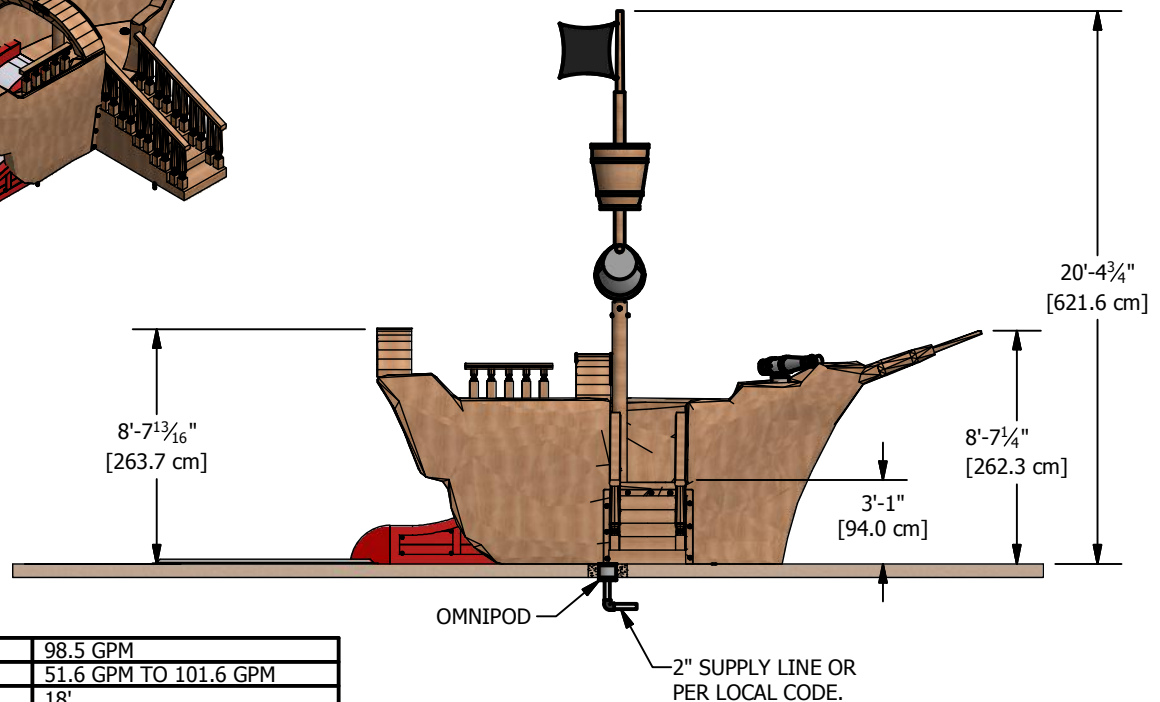
B

B



A

A



INTENDED FLOW	98.5 GPM
GPM OPERATION RANGE	51.6 GPM TO 101.6 GPM
HEAD	18'
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	Yes
NUMBER OF PEOPLE TO INSTALL	2
MANHOURS TO INSTALL	16

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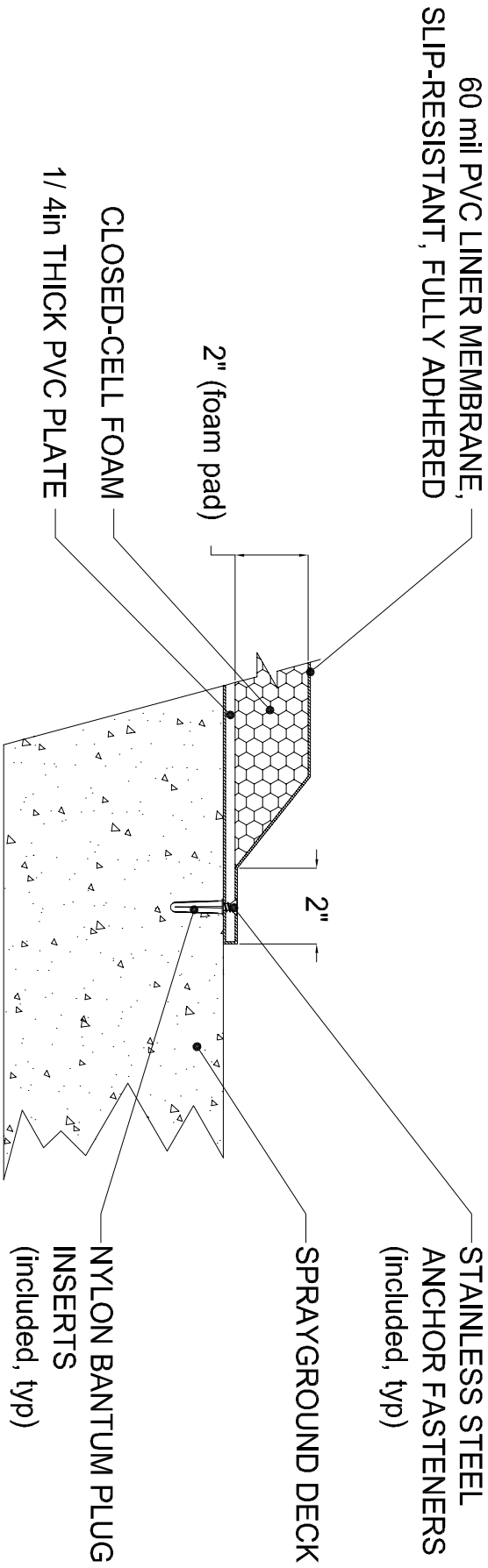
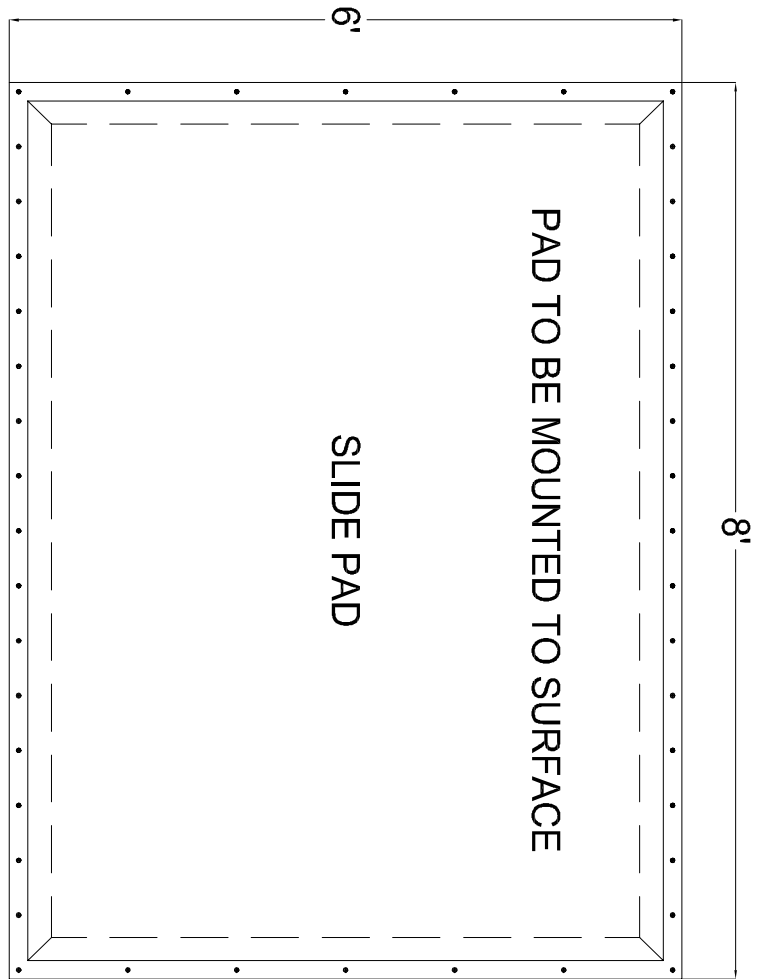
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PRODUCT NAME
MINI PIRATE SHIP SLIDE

SHEET 1 OF 1

PRODUCT PART #
MNSH-001-OM

REV
1



DRAWING	SLIDE PAD 6ft X 8ft	SCALE
	DATE	N.T.S.
	AUGUST 24th, 2011	
TYPICAL INSTALLATION DETAIL		
PROJECT		

Rain Drop
Products LLC

716 UNION ST. ASHLAND, OH 44805

TELE. 800/343-6063 FAX 419/207-8902

REVISIONS
DWG BY JMS

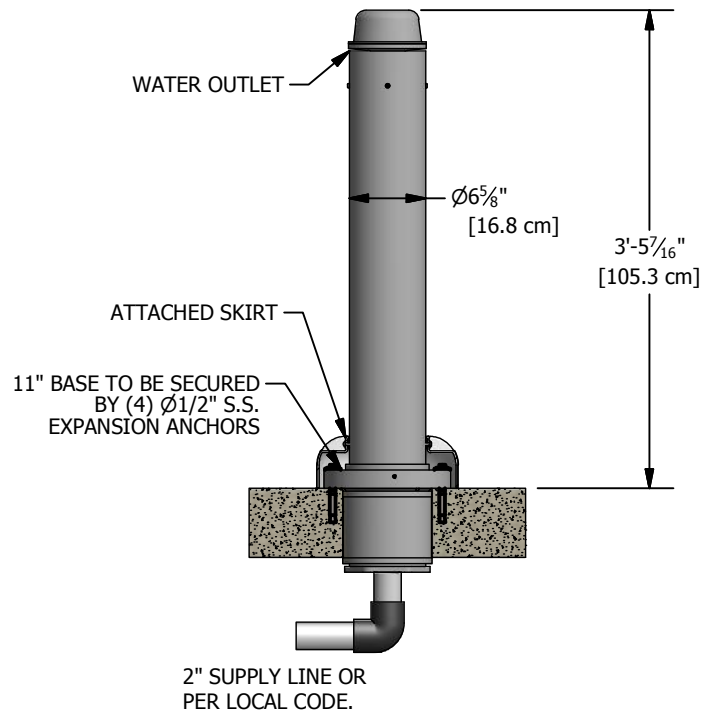
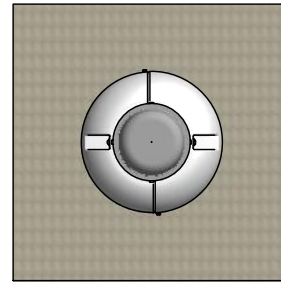
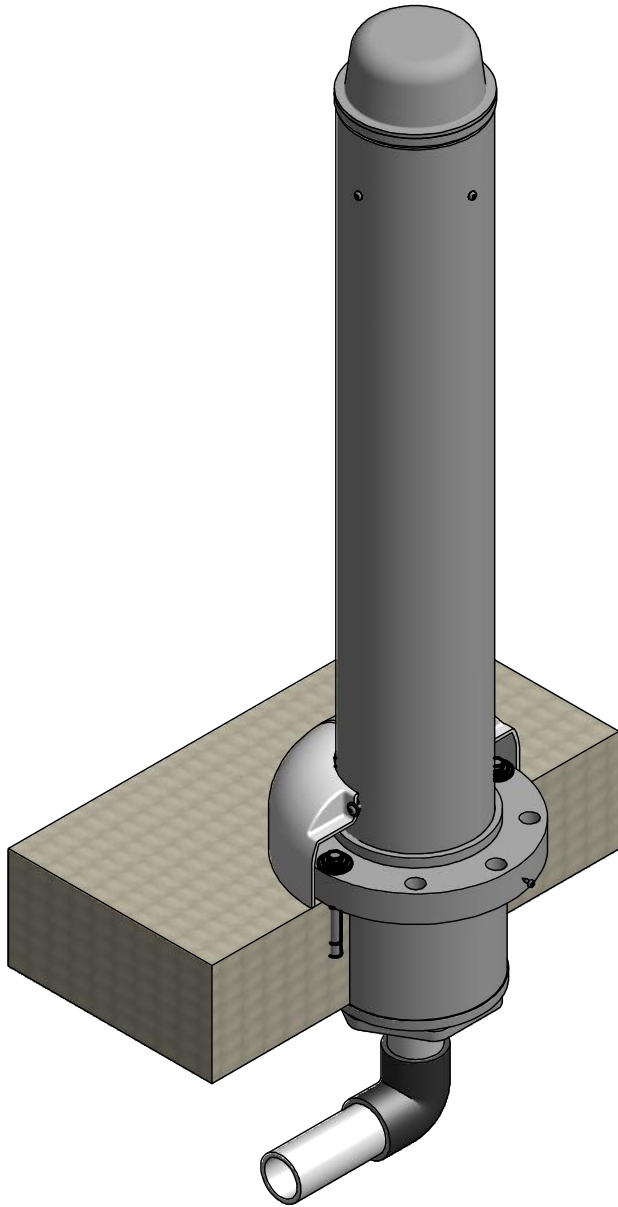
PRINT DATE:
Wednesday, November 23, 2011 4:29:11 PM

MODEL NO.
PAD-6X8


NOTE:

- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 40.9 GPM.
- #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
- #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.
- #4 SUPPLY LINE TO BE SOLVENT WELDED TO OMNIPOD FEATURE RECIEVER.
- #5 CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.

AREA OF INFLUENCE:
5' DIAMETER
VARIES WITH FLOW



INTENDED FLOW	30 GPM
GPM OPERATION RANGE	19.1 GPM TO 40.9 GPM
HEAD	6'
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	Yes
NUMBER OF PEOPLE TO INSTALL	1
MANHOURS TO INSTALL	1

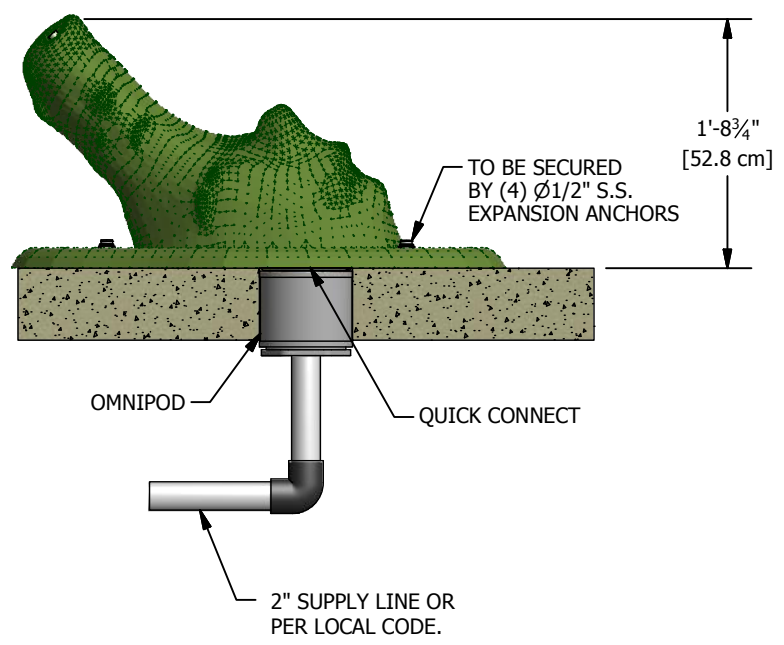
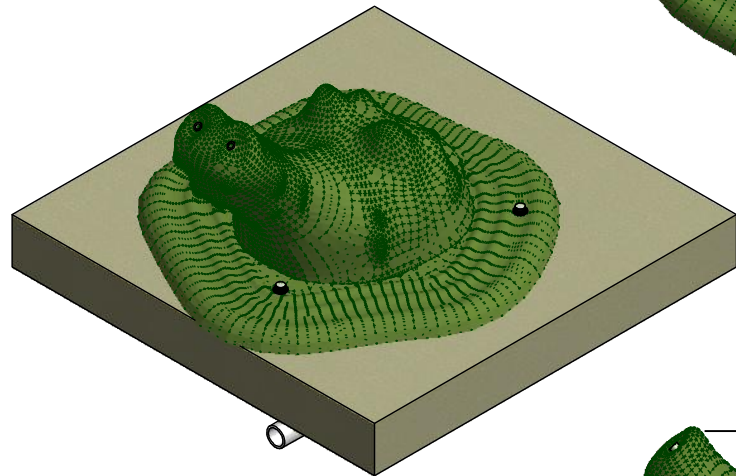
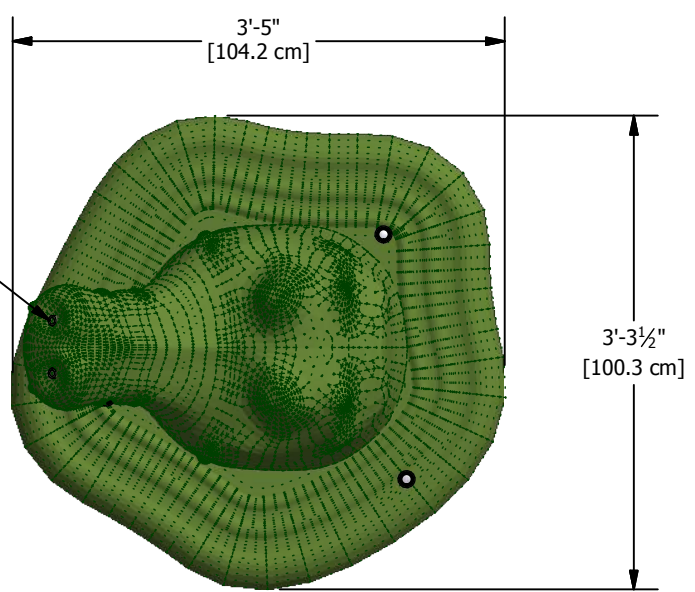
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	PRODUCT NAME <h2 style="text-align: center;">BELL SPRAY-OMNIPOD</h2>		PRODUCT PART # BLSJ-005-OM	REV 1

2

1

AREA OF INFLUENCE:
6' DIAMETER
VARIES WITH FLOW

- NOTE:
- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 20.4 GPM.
 - #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
 - #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.
 - #4 SUPPLY LINE TO BE SOLVENT WELDED TO OMNIPOD FEATURE RECIEVER.
 - #5 CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.



INTENDED FLOW	15 GPM
GPM OPERATION RANGE	9.5 GPM TO 20.4 GPM
HEAD	3'
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	Yes
NUMBER OF PEOPLE TO INSTALL	1
MANHOURS TO INSTALL	1

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F-419.207.8902

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PRODUCT NAME
CROCODILE STEVE, OMNI

SHEET 1 OF 1

PRODUCT PART #
CFSC-001-MF-OM-ZCS

REV

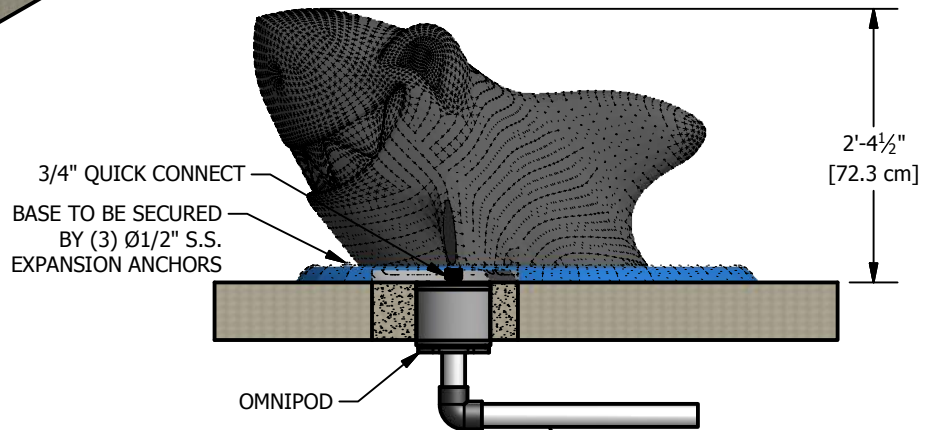
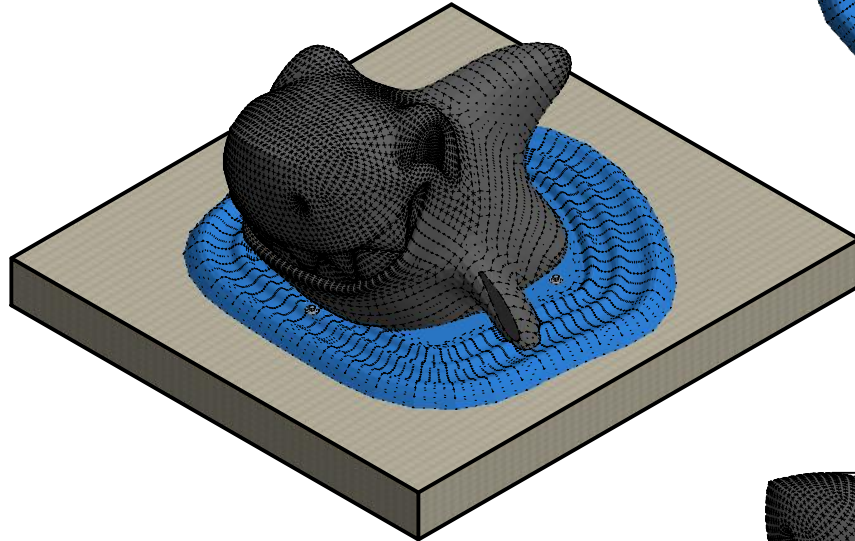
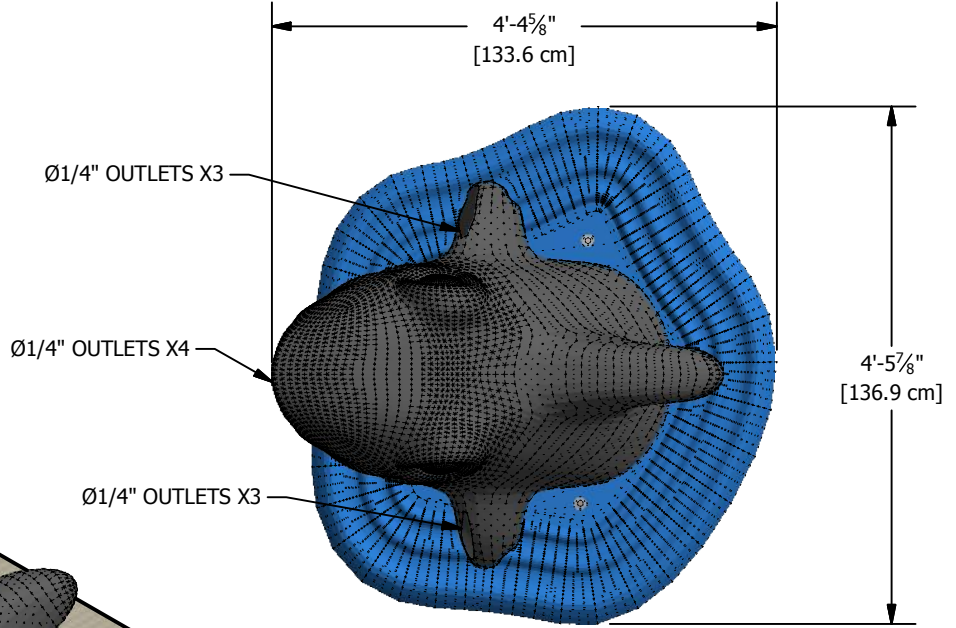
2

1

NOTE:

- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 23 GPM.
- #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
- #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.
- #4 SUPPLY LINE TO BE SOLVENT WELDED TO OMNIPOD FEATURE RECIEVER.
- #5 CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.

AREA OF INFLUENCE:
5' L X 7' W
VARIES WITH FLOW



INTENDED FLOW	16.8 GPM
GPM OPERATION RANGE	10.7 GPM TO 23 GPM
HEAD	4'
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	Yes
NUMBER OF PEOPLE TO INSTALL	2
MANHOURS TO INSTALL	2

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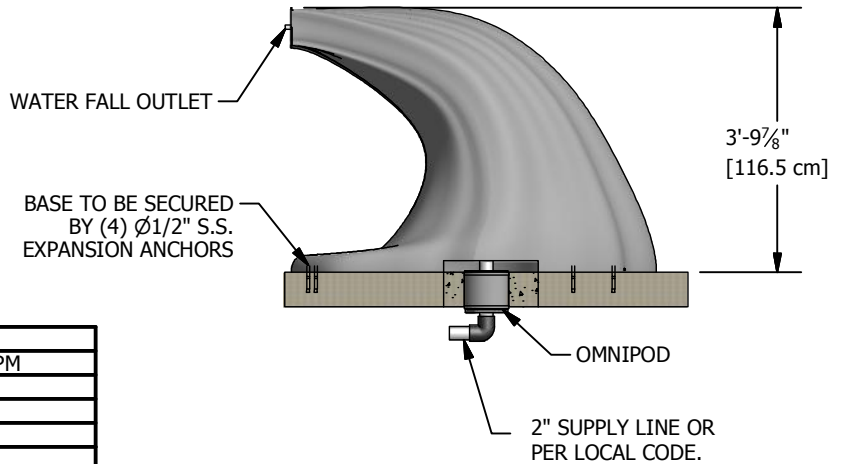
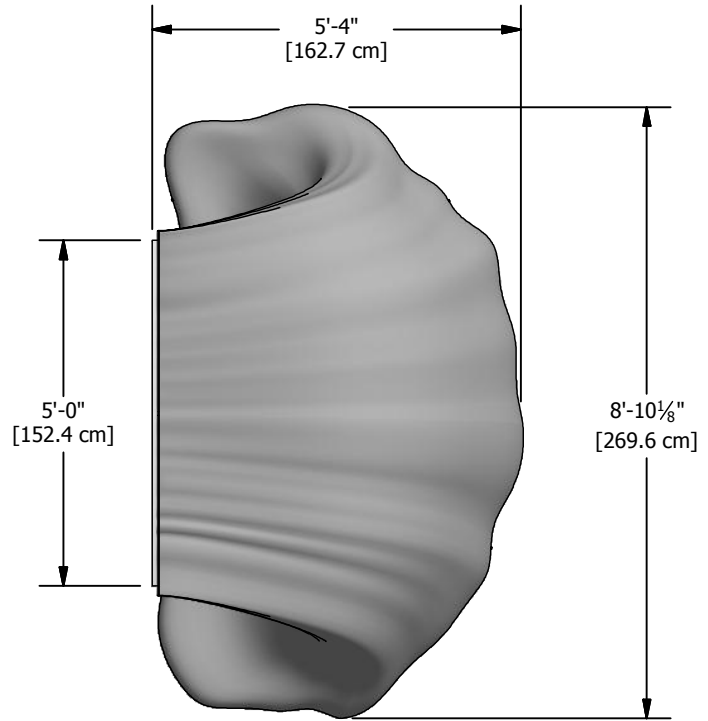
PRODUCT NAME
CREATURE FEATURE AQUA SHARK, OMNI

SHEET 1 OF 1	
PRODUCT PART #	REV
CFSK-001-OM	1

NOTE:

- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 49.7 GPM.
- #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
- #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.
- #4 SUPPLY LINE TO BE SOLVENT WELDED TO OMNIPOD FEATURE RECIEVER.
- #5 CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.

AREA OF INFLUENCE:
12' L X 6' W
VARIES WITH FLOW



INTENDED FLOW	36.5 GPM
GPM OPERATION RANGE	23.2 GPM TO 49.7 GPM
HEAD	5'
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	Yes
NUMBER OF PEOPLE TO INSTALL	1
MANHOURS TO INSTALL	2

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PRODUCT NAME
BIG KAHUNA WAVE OMNI

SHEET 1 OF 1

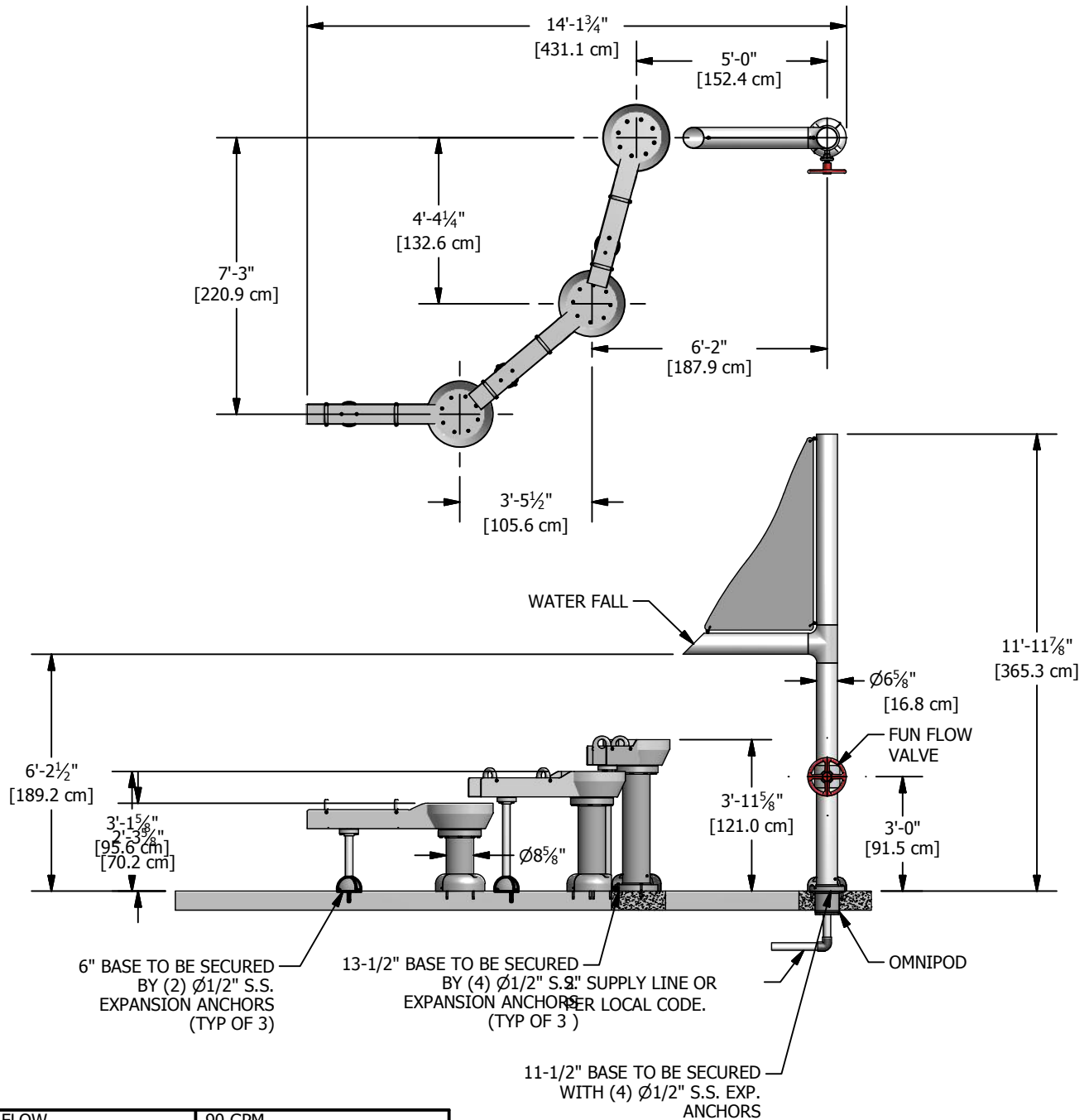
PRODUCT PART #
WAVE-001-OM

REV
1

NOTE:

- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 90 GPM.
- #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
- #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.
- #4 SUPPLY LINE TO BE SOLVENT WELDED TO OMNIPOD FEATURE RECEIVER.
- #5 CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.

AREA OF INFLUENCE:
14' L X 9' W
VARIES WITH FLOW



INTENDED FLOW	90 GPM
GPM OPERATION RANGE	20 GPM TO 90 GPM
HEAD	8'
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	Yes
NUMBER OF PEOPLE TO INSTALL	2
MANHOURS TO INSTALL	3

REVISION HISTORY		
REV	DESCRIPTION	DATE
1	CHG'D DESIGN	3/20/2015

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PRODUCT NAME
PIPE FALLS PLAYCENTER W/ SAIL -OMNIPOD

SHEET 1 OF 1

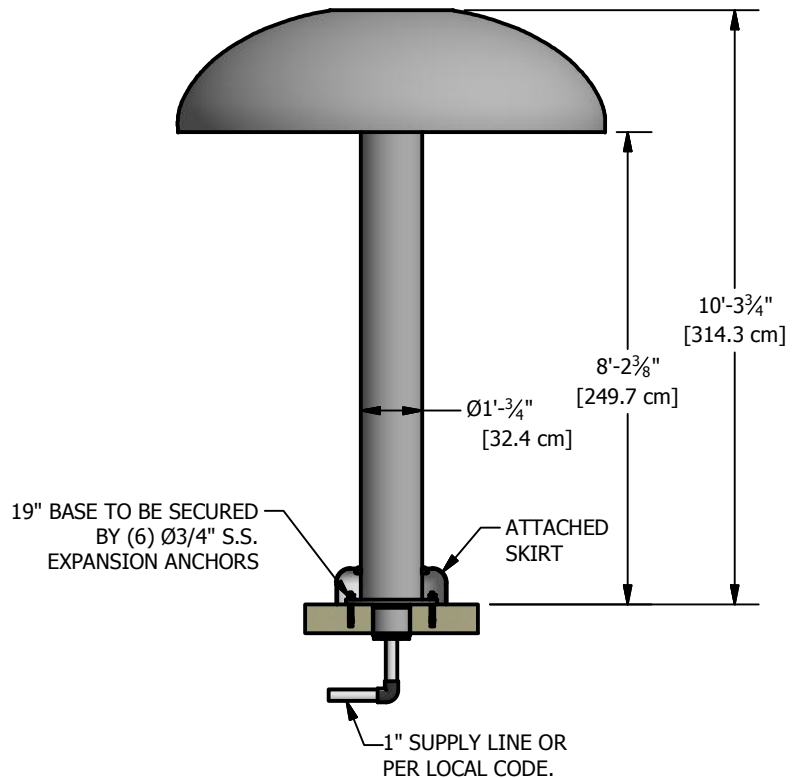
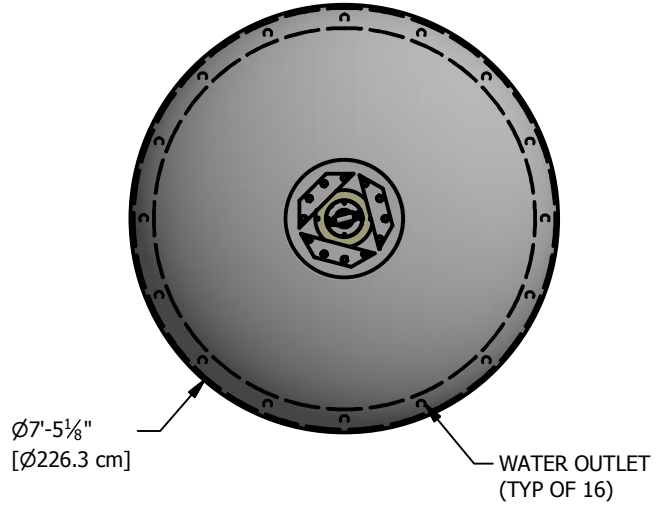
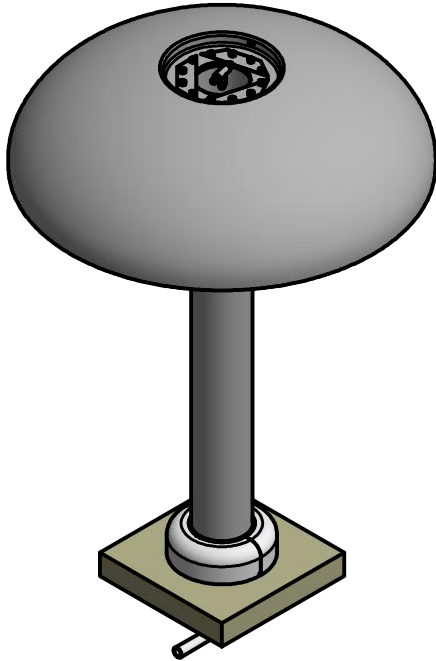
PRODUCT PART #
PFPC-012-OM

REV
1

NOTE:

- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 4.2 GPM.
- #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
- #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.
- #4 SUPPLY LINE TO BE SOLVENT WELDED TO OMNIPOD FEATURE RECEIVER.
- #5 CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.

AREA OF INFLUENCE:
12' DIAMETER
VARIES WITH FLOW



INTENDED FLOW	3.1 GPM
GPM OPERATION RANGE	2 GPM TO 4.2 GPM
HEAD	15'
MINIMUM SUPPLY LINE SIZE	1"
RECIRCULATED WATER	No
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	Yes
NUMBER OF PEOPLE TO INSTALL	2
MANHOURS TO INSTALL	4

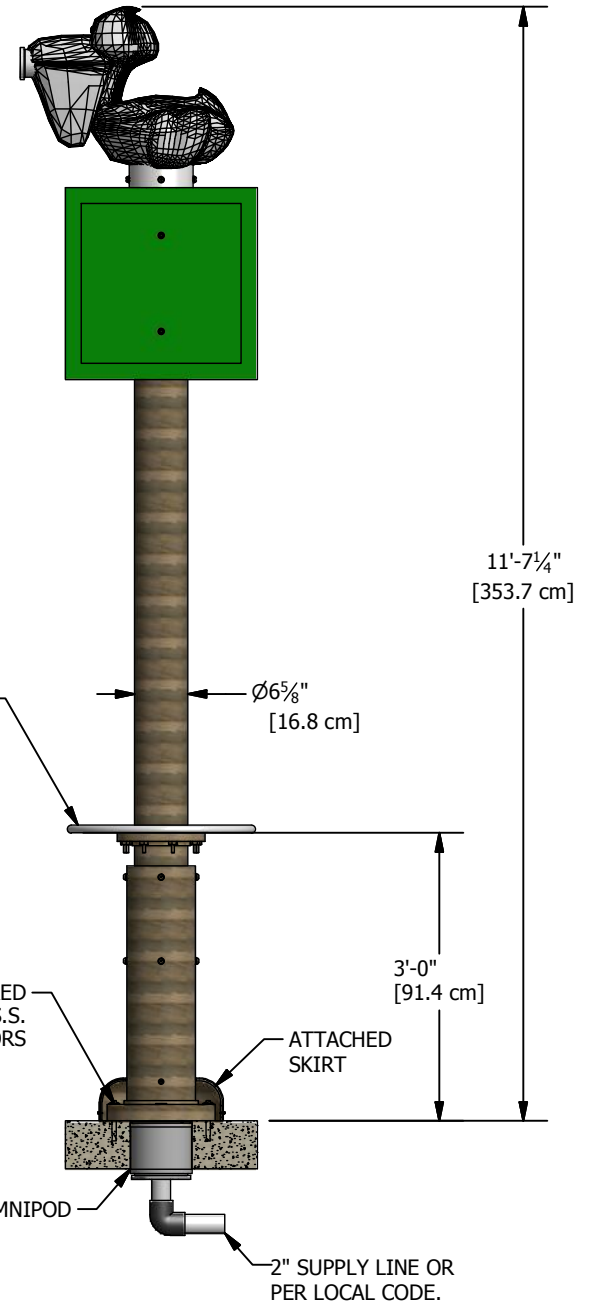
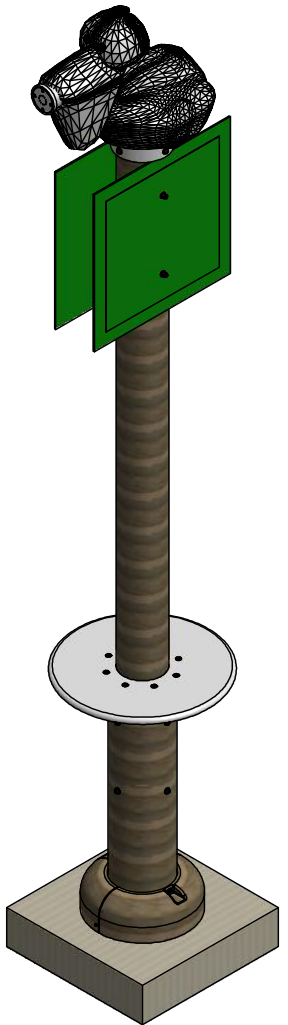
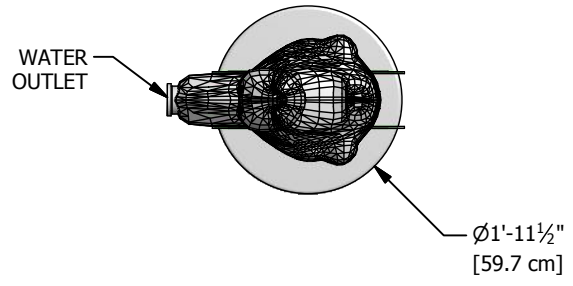
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	RAIN DROP, MYSTICAL FUN, OMNI		PRODUCT PART #	REV
		RNDP-001-MF-OM	1	

2

1

- NOTE:
- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 6.9 GPM.
 - #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
 - #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.
 - #4 SUPPLY LINE TO BE SOLVENT WELDED TO OMNIPOD FEATURE RECIEVER.
 - #5 CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.

AREA OF INFLUENCE:
16' DIAMETER
VARIES WITH FLOW



INTENDED FLOW	5.1 GPM
GPM OPERATION RANGE	3.2 GPM TO 6.9 GPM
HEAD	15'
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	Yes
NUMBER OF PEOPLE TO INSTALL	2
MANHOURS TO INSTALL	2

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PRODUCT NAME
PELICAN SQ MARKER CANNON-OMNIPOD

SHEET 1 OF 1

PRODUCT PART #
PLCN-002-OM

REV
1

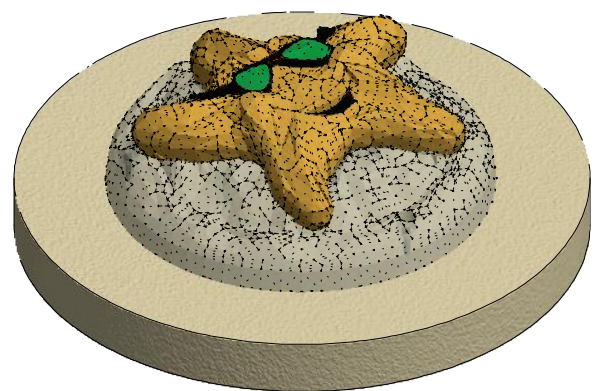
AREA OF INFLUENCE:
6' DIAMETER
VARIES WITH FLOW

- NOTE:
- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 12.9 GPM.
 - #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
 - #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.
 - #4 SUPPLY LINE TO BE SOLVENT WELDED TO OMNIPOD FEATURE RECIEVER.
 - #5 CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.

Ø3'-4¹¹/₁₆" [103.3 cm]

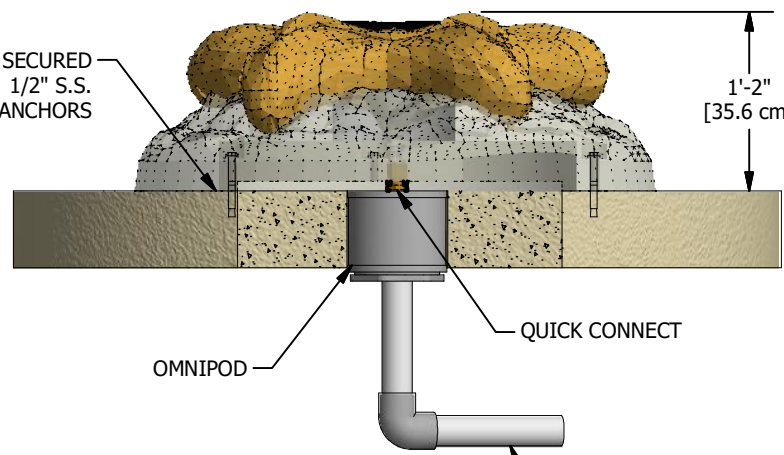


WATER OUTLETS



BASE TO BE SECURED BY (3) 1/2" S.S. EXPANSION ANCHORS

1'-2" [35.6 cm]



OMNIPOD

QUICK CONNECT

2" SUPPLY LINE OR PER LOCAL CODE.

INTENDED FLOW	9.4 GPM
GPM OPERATION RANGE	6 GPM TO 12.9 GPM
HEAD	6'
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	Yes
NUMBER OF PEOPLE TO INSTALL	1
MANHOURS TO INSTALL	2

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PRODUCT NAME
CREATURE FEATURE SEBASTIAN STAR OMNIPOD

SHEET 1 OF 1	
PRODUCT PART #	REV
CFST-003-OM	1

NOTE:

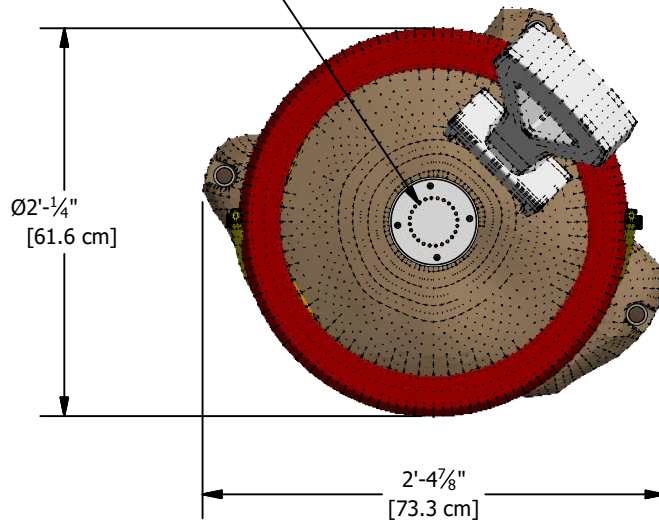
- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 31.2 GPM.
- #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
- #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.
- #4 SUPPLY LINE TO BE SOLVENT WELDED TO OMNIPOD FEATURE RECEIVER.
- #5 CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.

AREA OF INFLUENCE:
6' DIAMETER
VARIES WITH FLOW

B

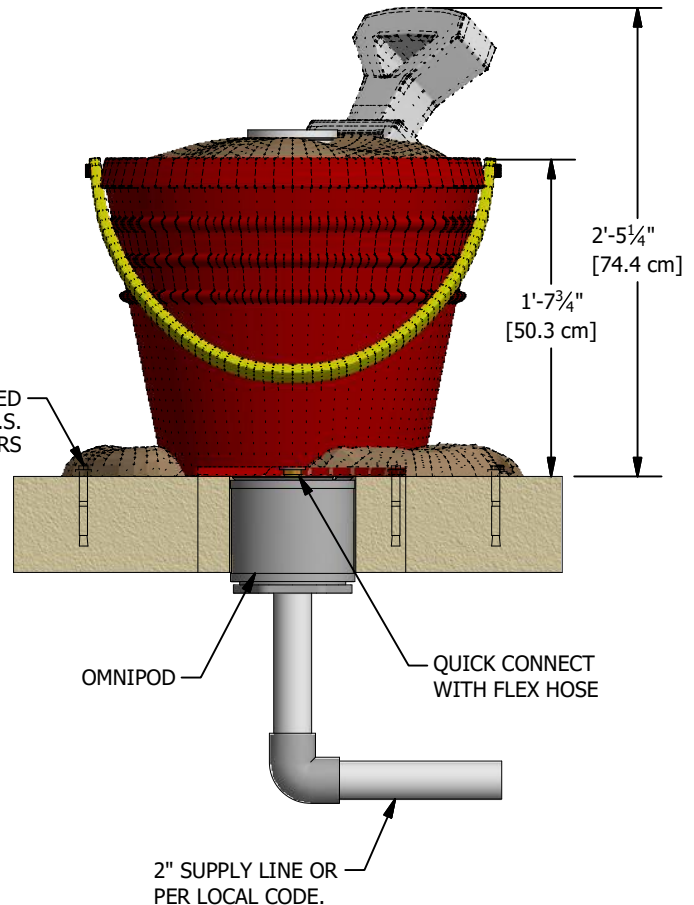
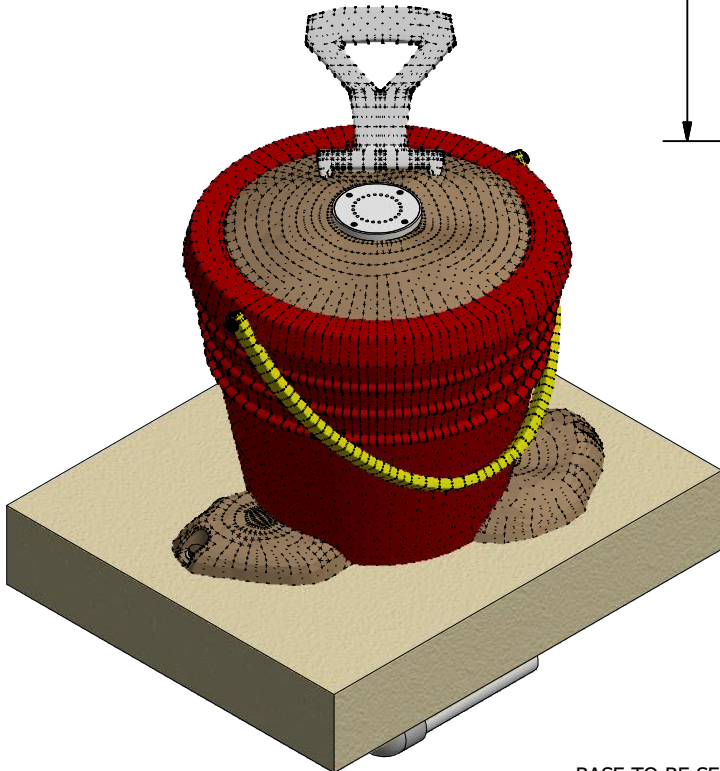
B

WATER OUTLET



A

A



BASE TO BE SECURED BY (3) Ø1/2" S.S. EXPANSION ANCHORS

OMNIPOD

QUICK CONNECT WITH FLEX HOSE

2" SUPPLY LINE OR PER LOCAL CODE.

INTENDED FLOW	22.9 GPM
GPM OPERATION RANGE	14.6 GPM TO 31.2 GPM
HEAD	6
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	Yes
NUMBER OF PEOPLE TO INSTALL	1
MANHOURS TO INSTALL	1

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PRODUCT NAME

THEME SPRAY-BEACH BUCKET-OM

SHEET 1 OF 1

PRODUCT PART #

TSBC-001-OM

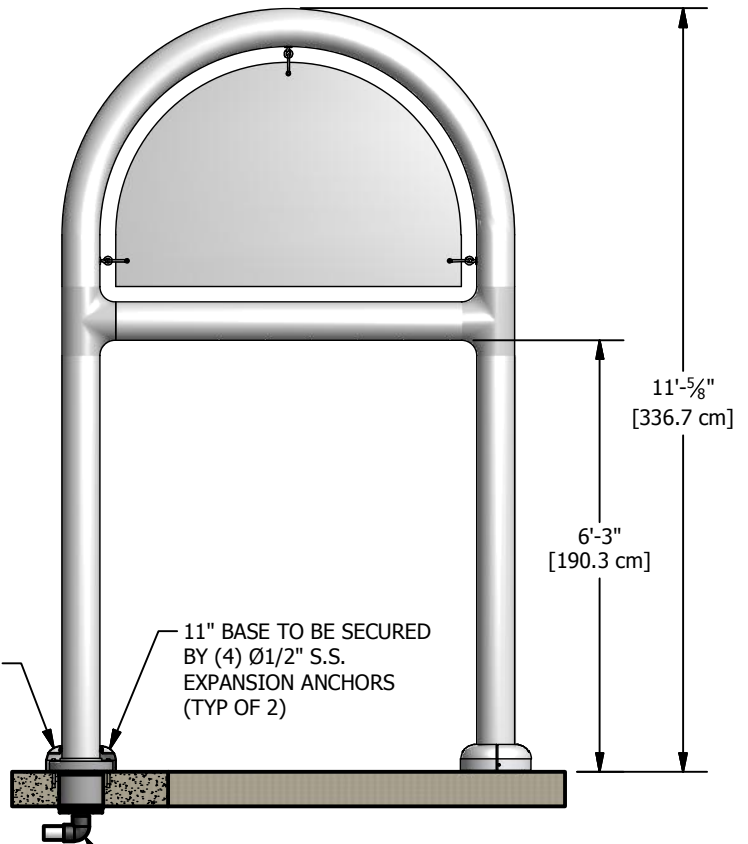
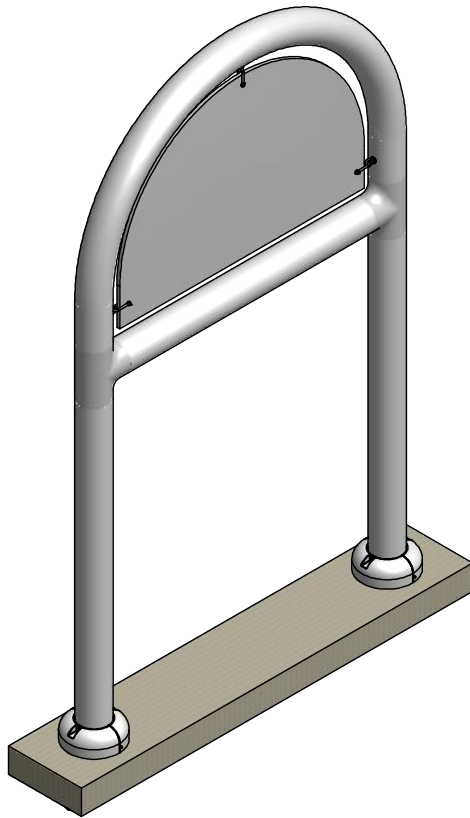
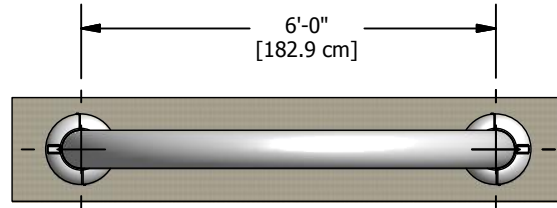
REV

1

AREA OF INFLUENCE:
10' L X 6' W
VARIES WITH FLOW

NOTE:

- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 62 GPM.
- #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
- #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.
- #4 SUPPLY LINE TO BE SOLVENT WELDED TO OMNIPOD FEATURE RECIEVER.
- #5 CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.



INTENDED FLOW	45.4 GPM
GPM OPERATION RANGE	28.9 GPM TO 62 GPM
HEAD	8'
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	Yes
NUMBER OF PEOPLE TO INSTALL	2
MANHOURS TO INSTALL	2

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	<p>PRODUCT NAME</p> <p>ARCH JET WITH SIGN</p>		<p>PRODUCT PART #</p> <p>ARJT-007-OM</p>	<p>REV</p> <p>A</p>

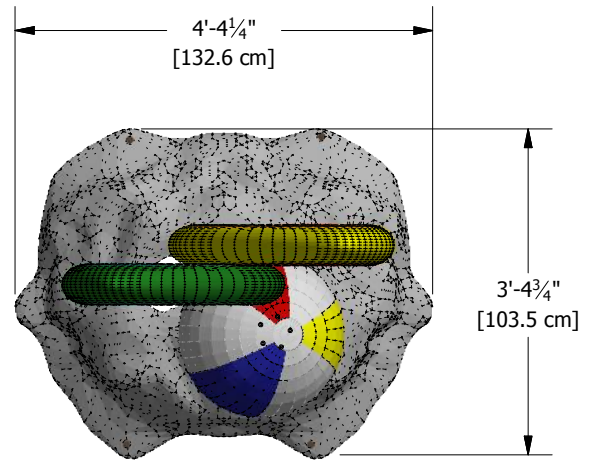
NOTE:

- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 55.5 GPM.
- #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
- #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.
- #4 SUPPLY LINE TO BE SOLVENT WELDED TO OMNIPOD FEATURE RECIEVER.
- #5 CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.

AREA OF INFLUENCE:
4' L X 9' W
VARIES WITH FLOW

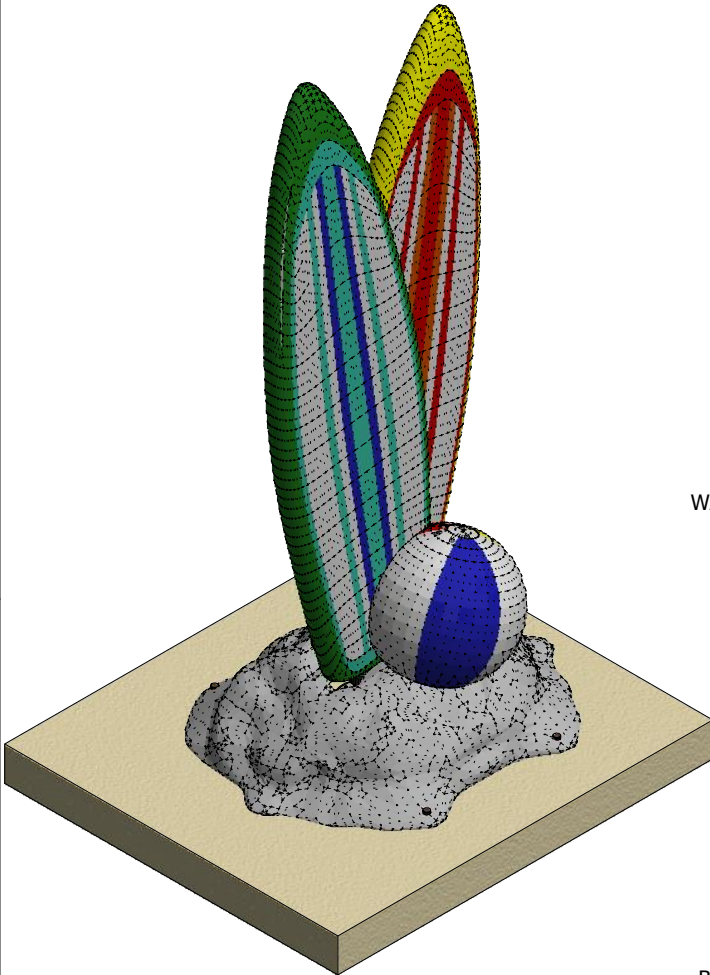
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B



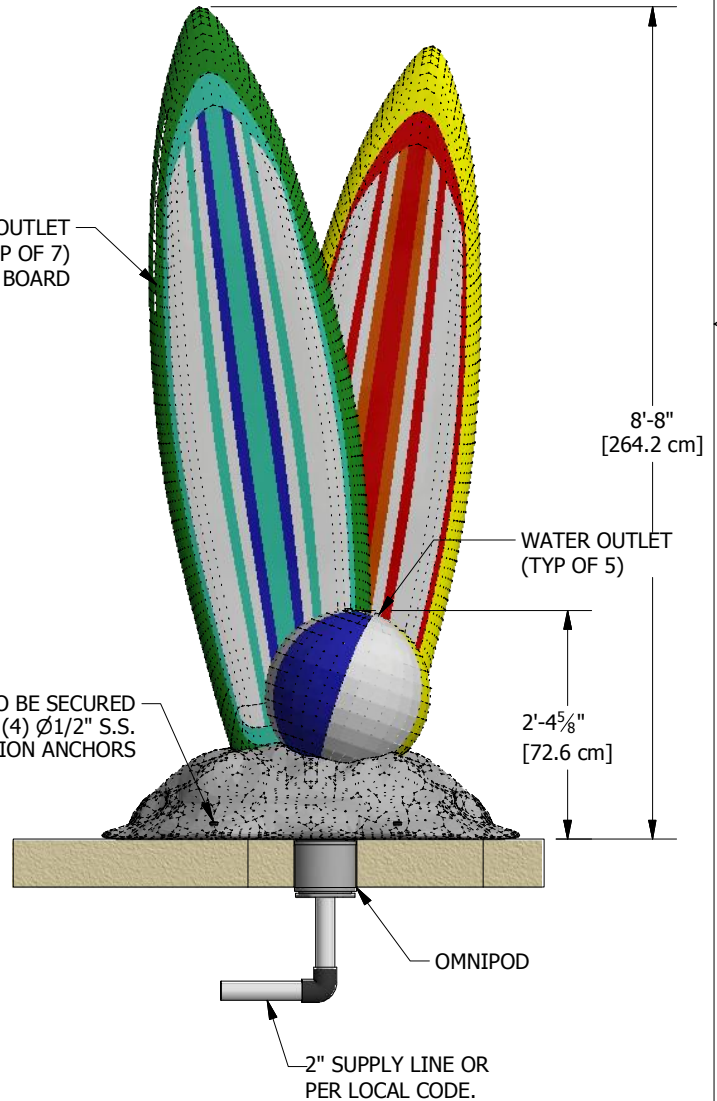
A

A



WATER OUTLET
(TYP OF 7)
EACH BOARD

BASE TO BE SECURED
BY (4) Ø1/2" S.S.
EXPANSION ANCHORS



INTENDED FLOW	40.7 GPM
GPM OPERATION RANGE	25.9 GPM TO 55.5 GPM
HEAD	12'
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	Yes
NUMBER OF PEOPLE TO INSTALL	2
MANHOURS TO INSTALL	4

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PRODUCT NAME

SURF'S UP BOARDS, OMNI

SHEET 1 OF 1

PRODUCT PART #

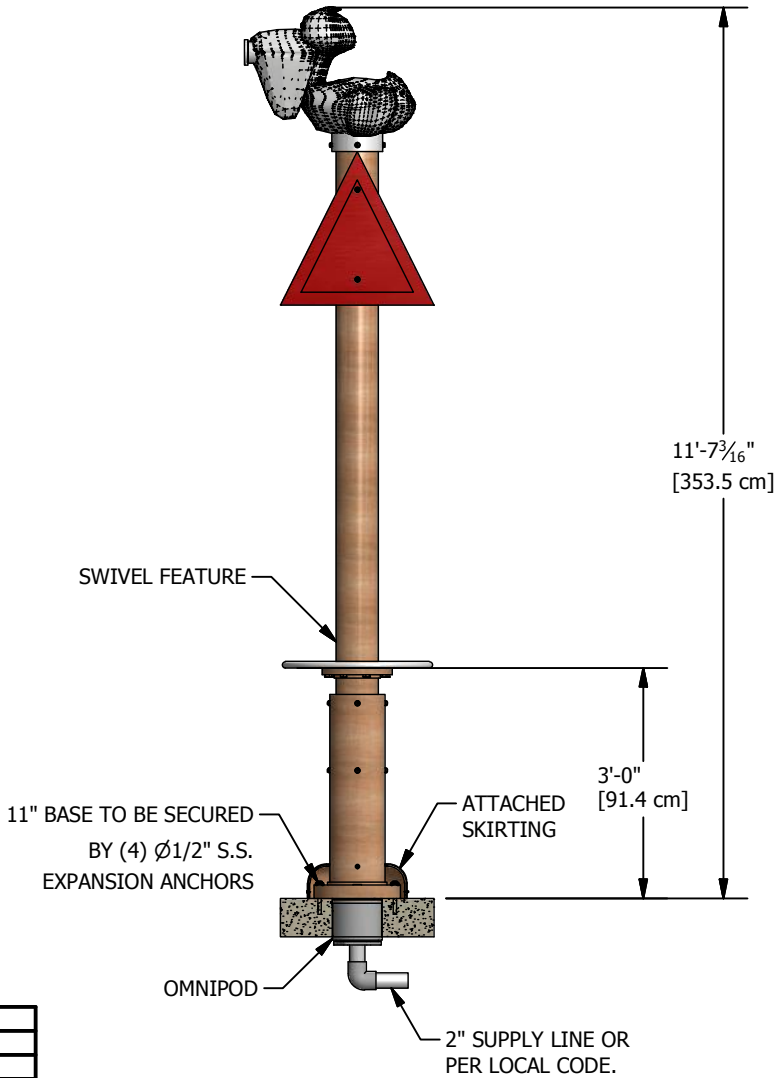
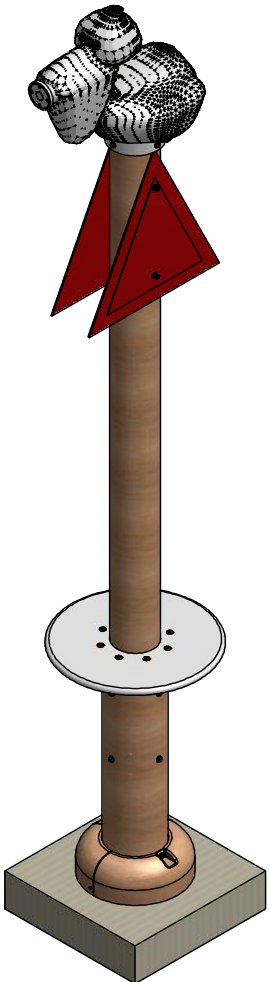
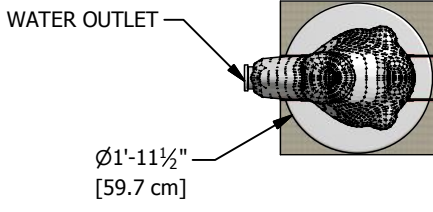
SRFB-001-OM

REV

1

AREA OF INFLUENCE:
16' DIAMETER
VARIES WITH FLOW

- NOTE:
- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 6.9 GPM.
 - #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
 - #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.
 - #4 SUPPLY LINE TO BE SOLVENT WELDED TO OMNIPOD FEATURE RECEIVER.
 - #5 CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.



GPM OPERATION RANGE	3.2 GPM TO 6.9 GPM
INTENDED FLOW	5.1 GPM
HEAD	15'
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	Yes
NUMBER OF PEOPLE TO INSTALL	2
MANHOURS TO INSTALL	2

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PRODUCT NAME
PELICAN TRI MARKER CANNON-OMNIPOD

SHEET 1 OF 1

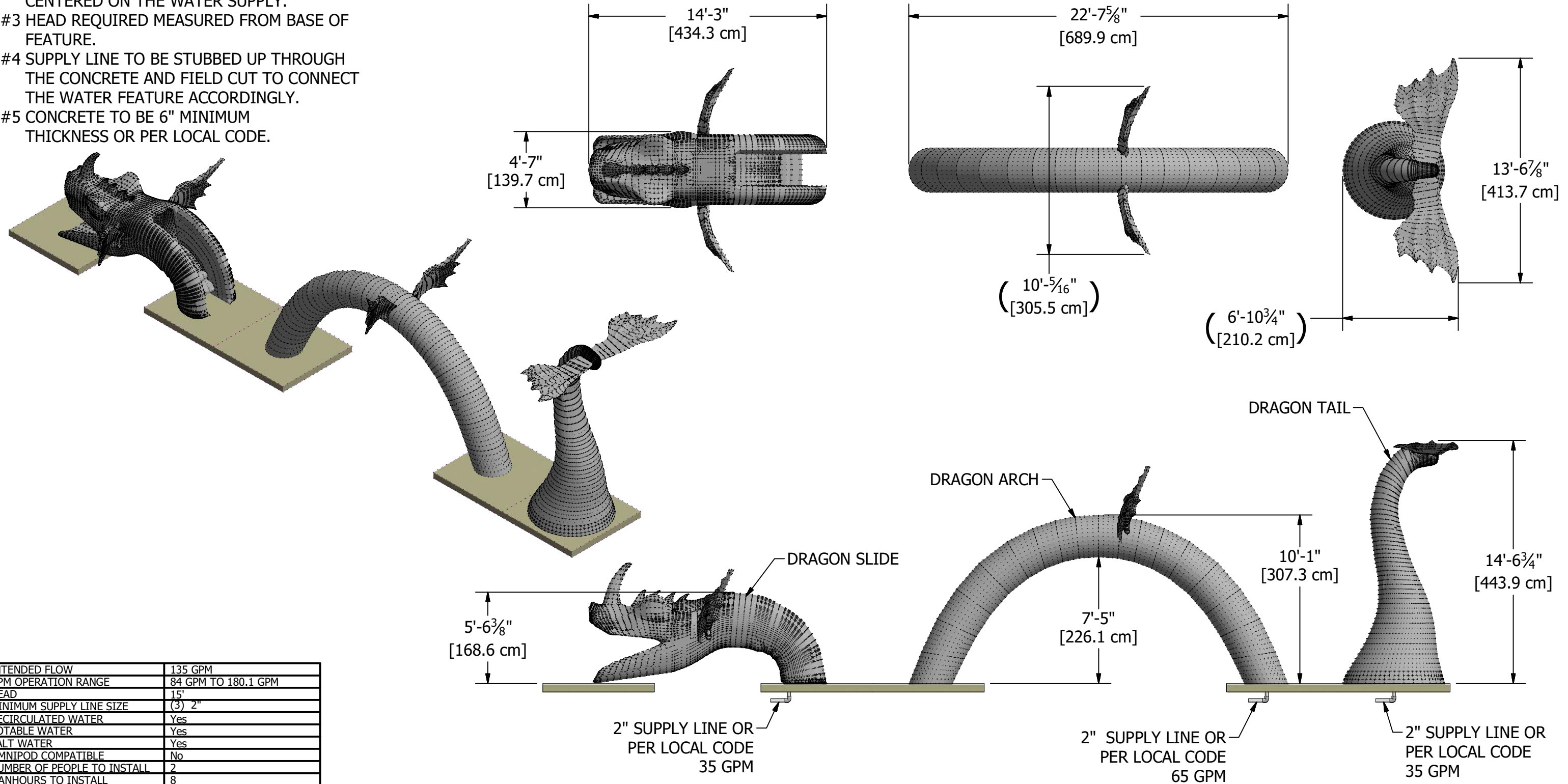
PRODUCT PART #
PLCN-001-OM

REV
1

NOTE:

- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 180.1 GPM.
- #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
- #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.
- #4 SUPPLY LINE TO BE STUBBED UP THROUGH THE CONCRETE AND FIELD CUT TO CONNECT THE WATER FEATURE ACCORDINGLY.
- #5 CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.

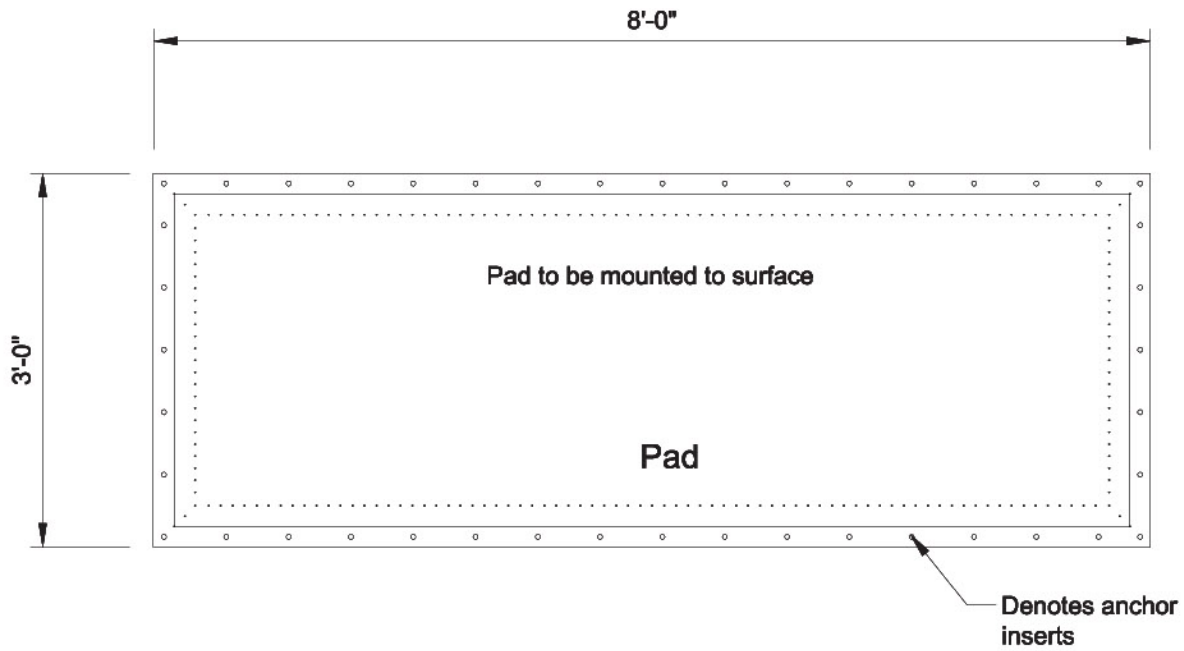
AREA OF INFLUENCE:
65' L X 8' W
VARIES WITH FLOW



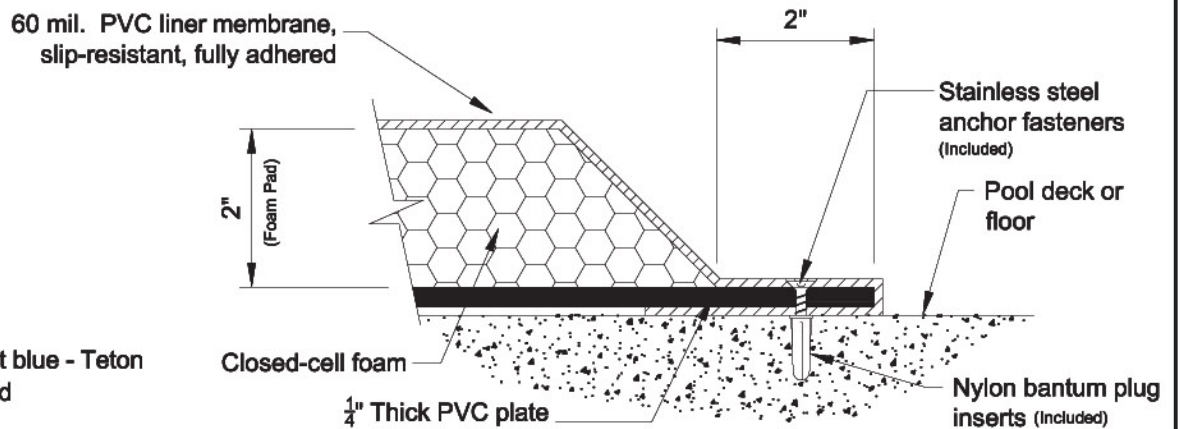
INTENDED FLOW	135 GPM
GPM OPERATION RANGE	84 GPM TO 180.1 GPM
HEAD	15'
MINIMUM SUPPLY LINE SIZE	(3) 2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	No
NUMBER OF PEOPLE TO INSTALL	2
MANHOURS TO INSTALL	8



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PRODUCT NAME DRAGON SLIDE W/HEAD, BODY, TAIL		SHEET 1 OF 1
PRODUCT PART # DGSL-001		REV 1



Top View



Note:

- Color to be light blue - Teton
- One (1) required

Surface Mounted Safety Pad



We reserve the right to make improvements or changes to our specifications without notice. This does not be assumed current, unless verified

Do Not Scale:
Refer to specific Dimensions

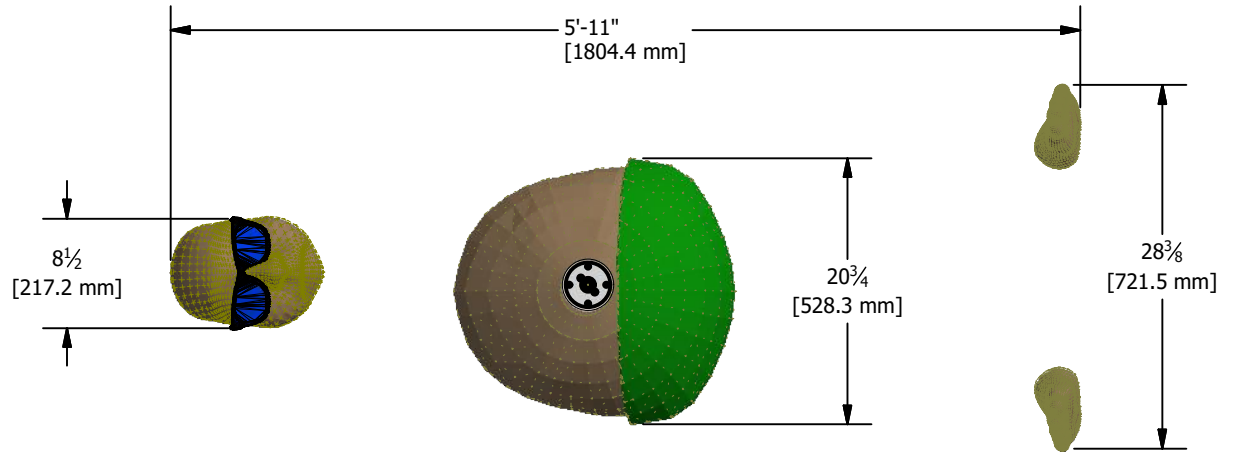
File: Slide Padding
Date: 5/23/08
Drawn By: RDP



- NOTE:
- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 9.2 GPM.
 - #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
 - #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.
 - #4 SUPPLY LINE TO BE SOLVENT WELDED TO OMNIPOD FEATURE RECEIVER.
 - #5 CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.

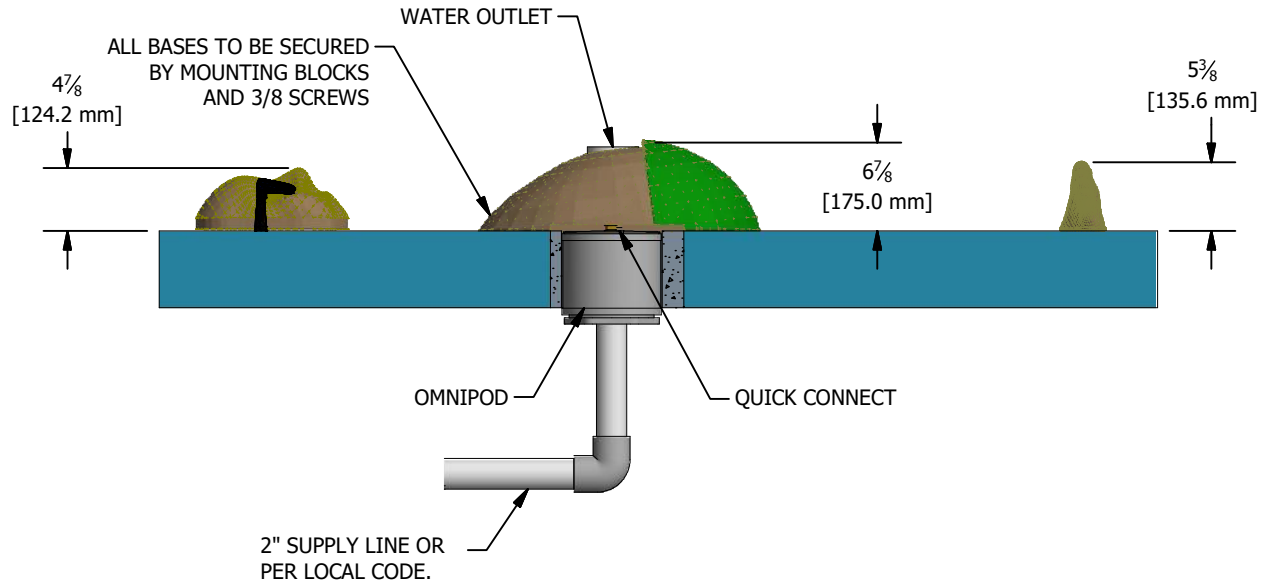
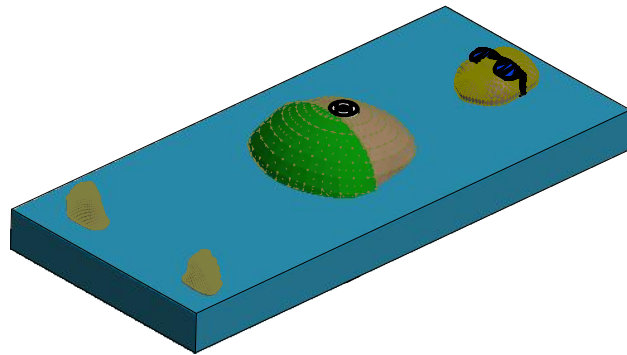
AREA OF INFLUENCE:
6' DIAMETER
VARIES WITH FLOW

B



B

A



A

INTENDED FLOW	6.7 GPM
GPM OPERATION RANGE	4.3 GPM TO 9.2 GPM
HEAD	5'
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	Yes
NUMBER OF PEOPLE TO INSTALL	1
MANHOURS TO INSTALL	2

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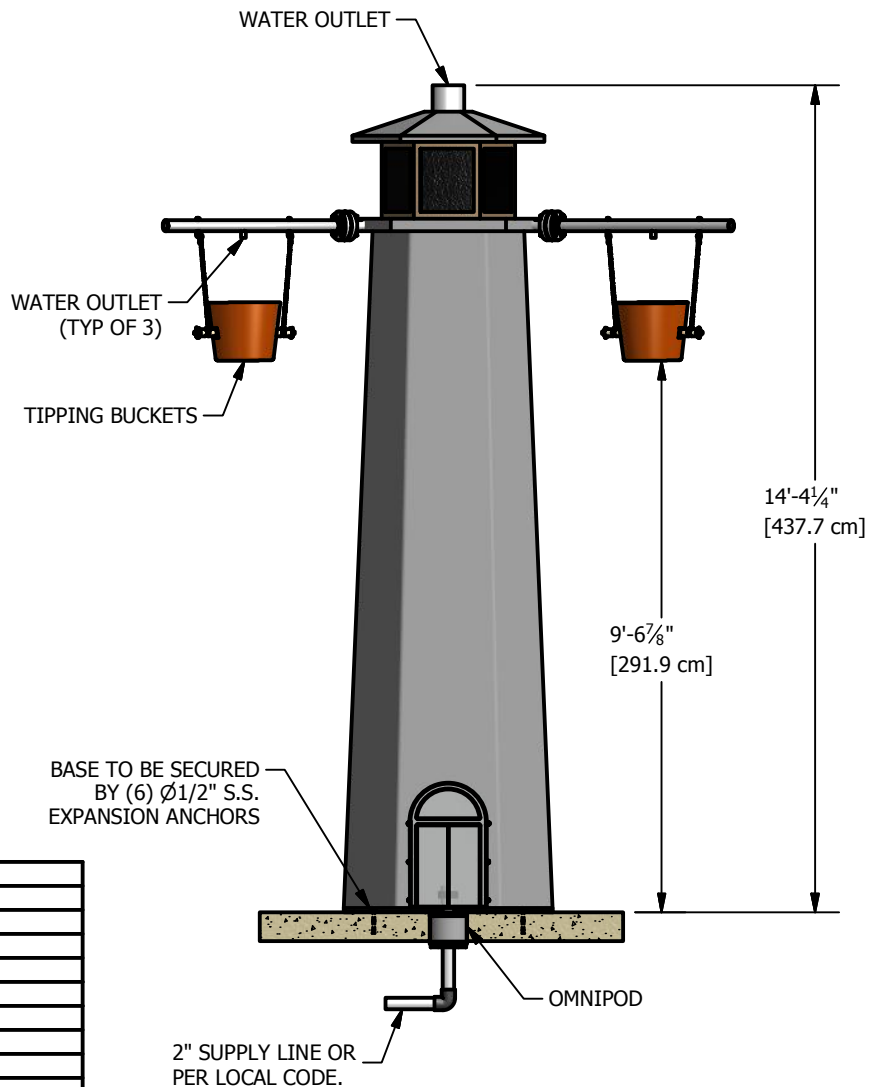
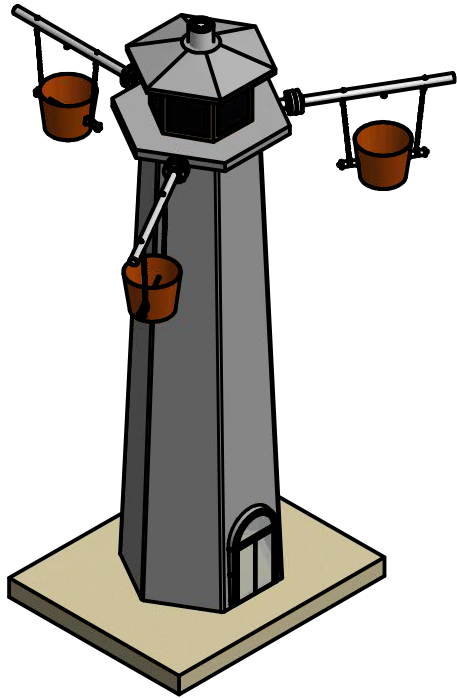
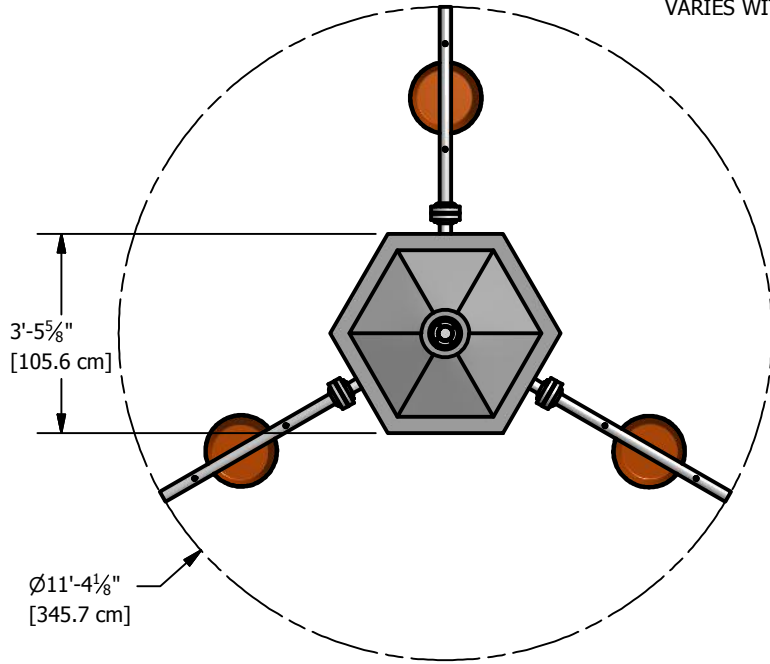
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PRODUCT NAME		SHEET 1 OF 1
CREATURE FEATURE SUN BATHER OMNI		PRODUCT PART #
		CFSU-001-OM
		REV
		1

- NOTE:
- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 90 GPM.
 - #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
 - #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.
 - #4 SUPPLY LINE TO BE SOLVENT WELDED TO OMNIPOD FEATURE RECIEVER.
 - #5 CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.

AREA OF INFLUENCE:
14' DIAMETER
VARIES WITH FLOW



INTENDED FLOW	69.6 GPM
GPM OPERATION RANGE	45.2 GPM TO 90 GPM
HEAD	18'
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	Yes
NUMBER OF PEOPLE TO INSTALL	2
MANHOURS TO INSTALL	8

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PRODUCT NAME

LEAKIN BEACON W/3 TIPPING BKTS

SHEET 1 OF 1

PRODUCT PART #

LKBN-006-OM

REV

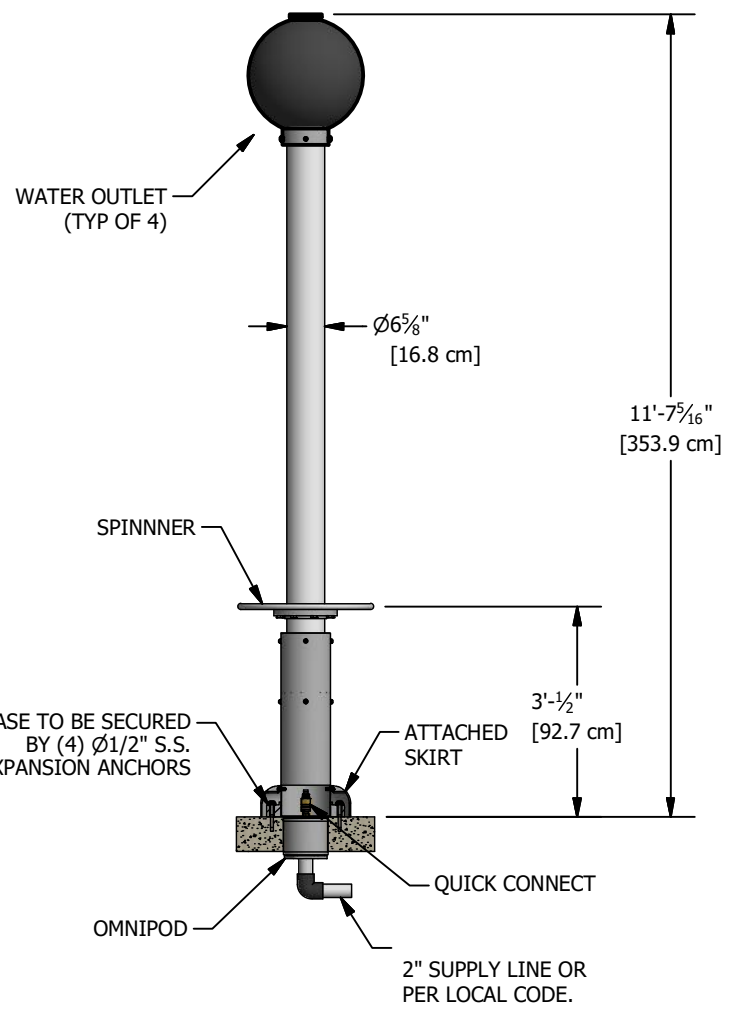
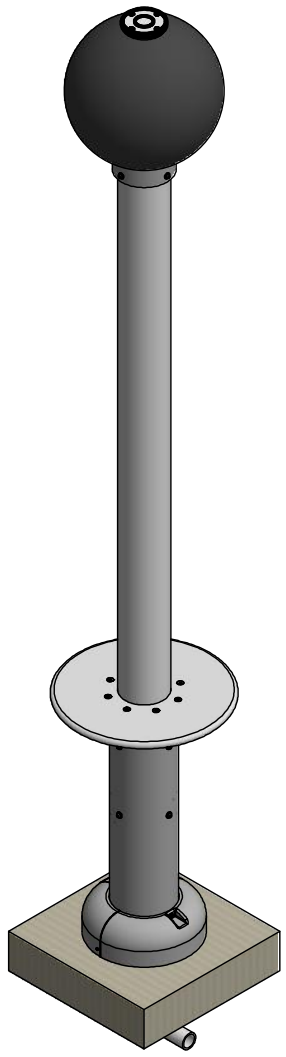
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2

1

AREA OF INFLUENCE:
8' DIAMETER
VARIES WITH FLOW

- NOTE:
- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 29.9 GPM.
 - #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
 - #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.
 - #4 SUPPLY LINE TO BE SOLVENT WELDED TO OMNIPOD FEATURE RECIEVER.
 - #5 CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.



INTENDED FLOW	24.4 GPM
GPM OPERATION RANGE	13.9 GPM TO 29.9 GPM
HEAD	16'
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	Yes
NUMBER OF PEOPLE TO INSTALL	2
MANHOURS TO INSTALL	2

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PRODUCT NAME
BEACH BALL SPINNER OMNI

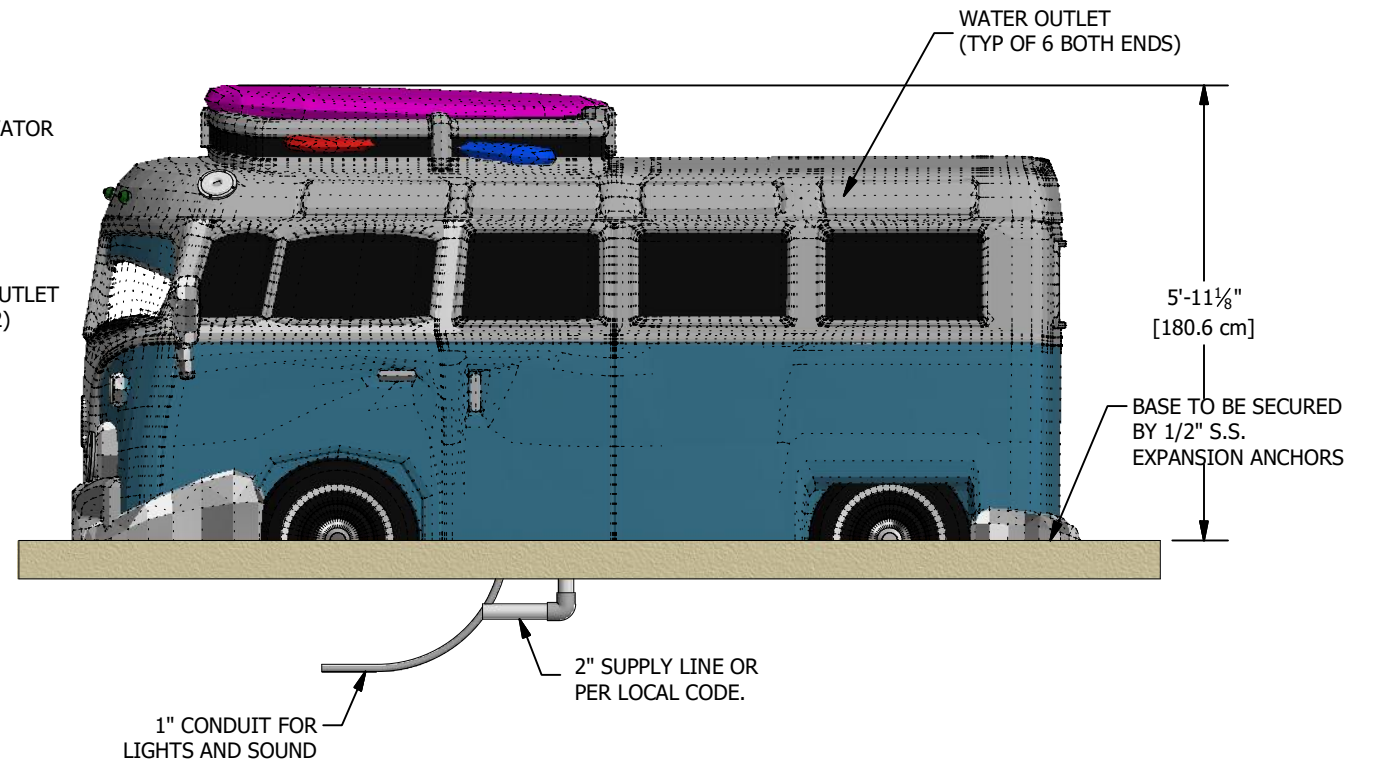
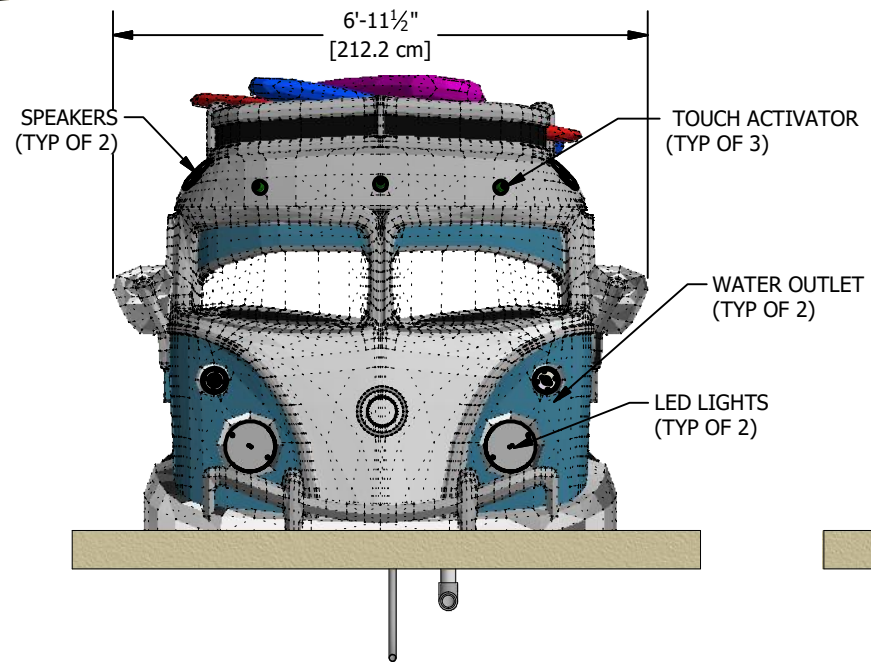
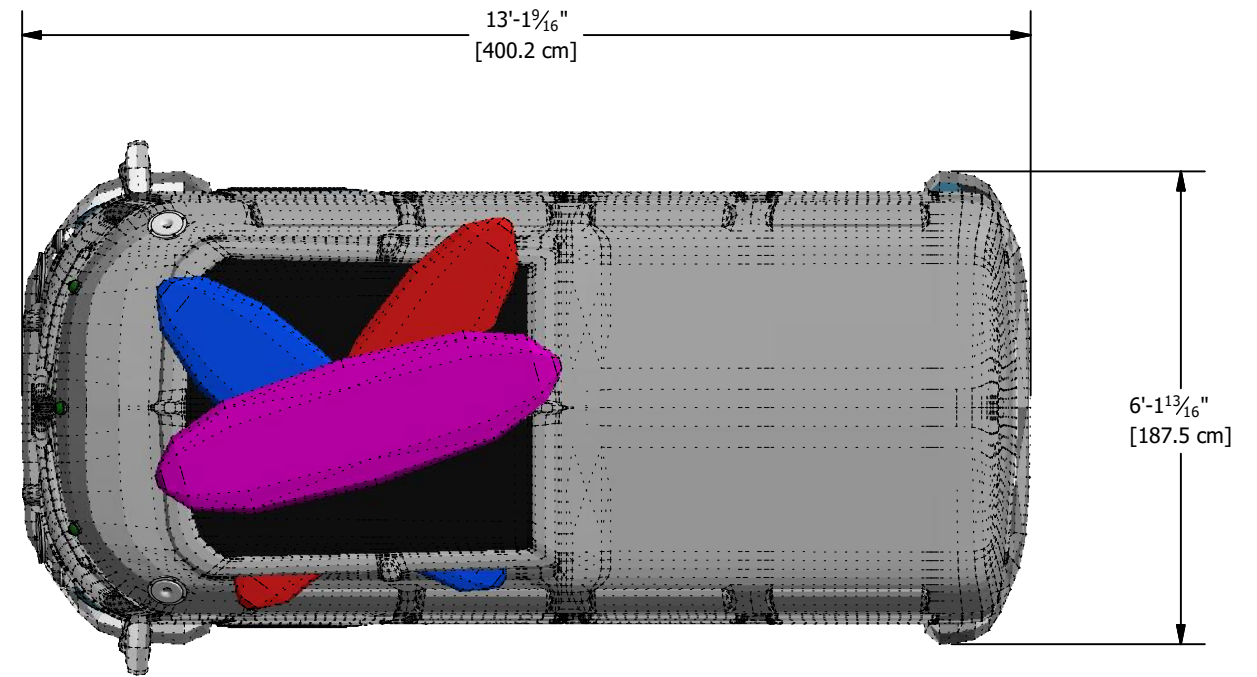
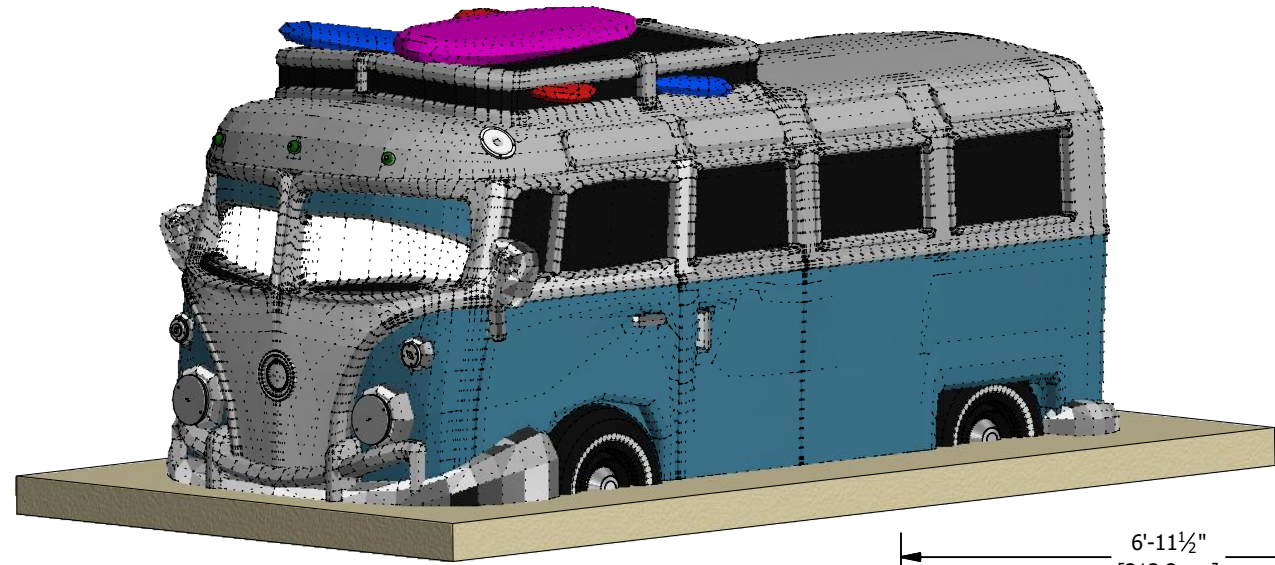
SHEET 1 OF 1

PRODUCT PART #
BCHSPN-001-OM

REV
1

- NOTE:
- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 90 GPM.
 - #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
 - #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.
 - #4 SUPPLY LINE TO BE STUBBED UP THROUGH THE CONCRETE AND FIELD CUT TO CONNECT THE WATER FEATURE ACCORDINGLY.
 - #5 CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.

AREA OF INFLUENCE:
16' L X 12' W
VARIES WITH FLOW



INTENDED FLOW	66 GPM
GPM OPERATION RANGE	42 GPM TO 90 GPM
HEAD	10'
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	No
NUMBER OF PEOPLE TO INSTALL	2
MANHOURS TO INSTALL	8

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PRODUCT NAME
SURF BUS FULL SIZE

SHEET 1 OF 1

PRODUCT PART #
SBUS-002

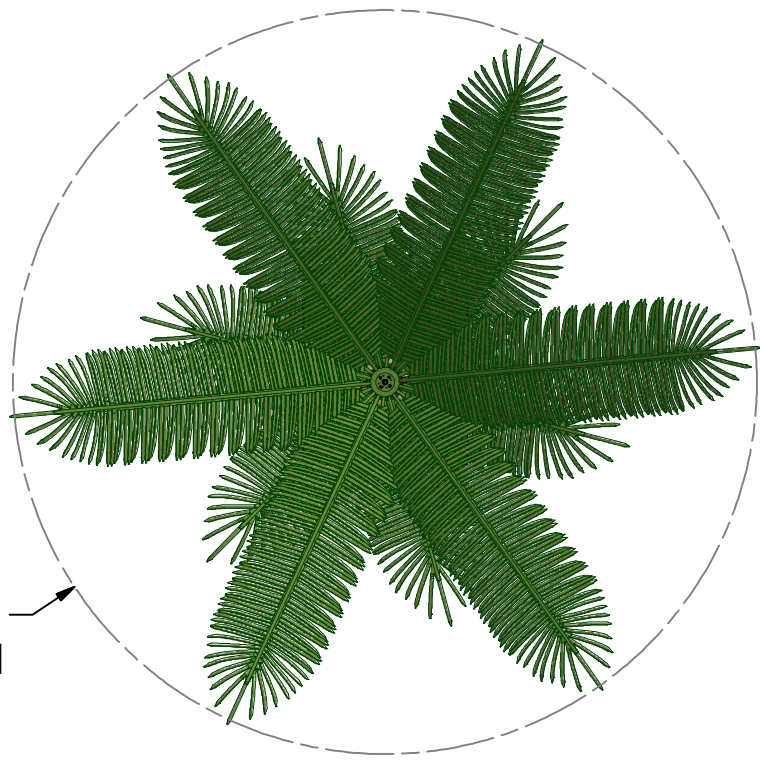
REV
1

2

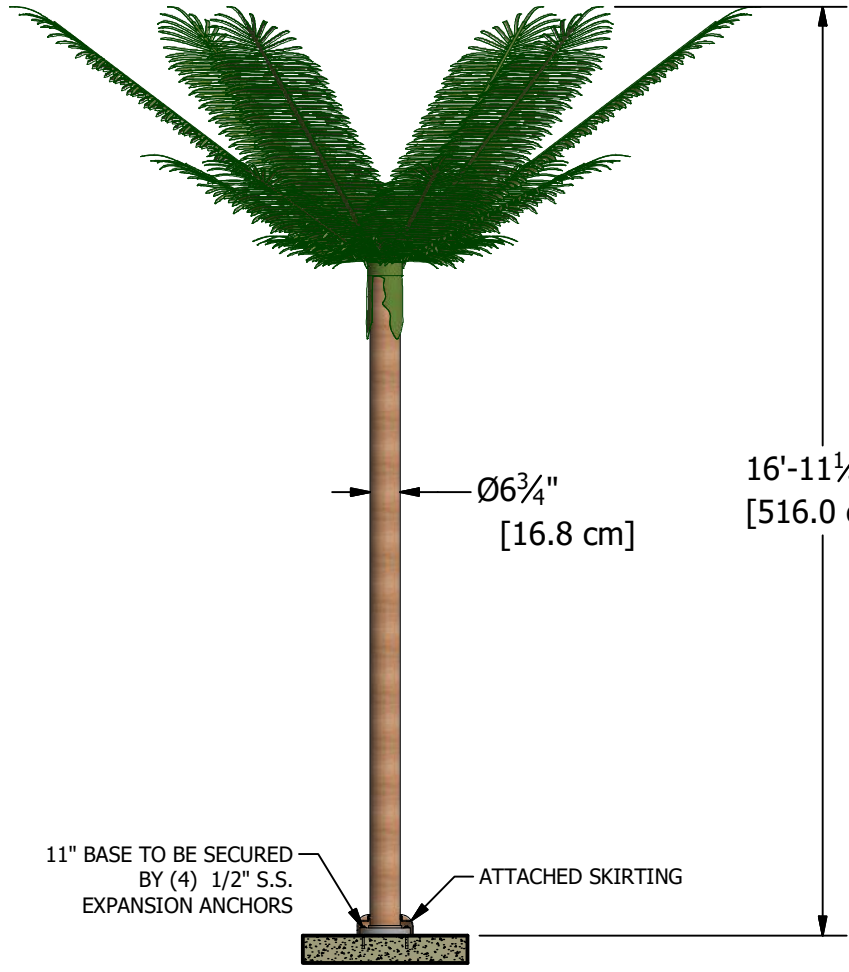
1

NOTE:
 #1 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER
 CENTERED ON THE WATER SUPPLY.
 #2 CONCRETE TO BE 6" MINIMUM
 THICKNESS OR PER LOCAL CODE.

AREA OF INFLUENCE:
 14' DIAMETER
 VARIES WITH FLOW



Ø13'-6¾"
 [Ø413.4 cm]



Ø6¾"
 [16.8 cm]

16'-11¼"
 [516.0 cm]

11" BASE TO BE SECURED
 BY (4) 1/2" S.S.
 EXPANSION ANCHORS

ATTACHED SKIRTING

NUMBER OF PEOPLE TO INSTALL	2
MANHOURS TO INSTALL	1

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PRODUCT NAME
PALM TREE NO SPRAY

SHEET 1 OF 1	
PRODUCT PART #	REV
PLMT-006	1

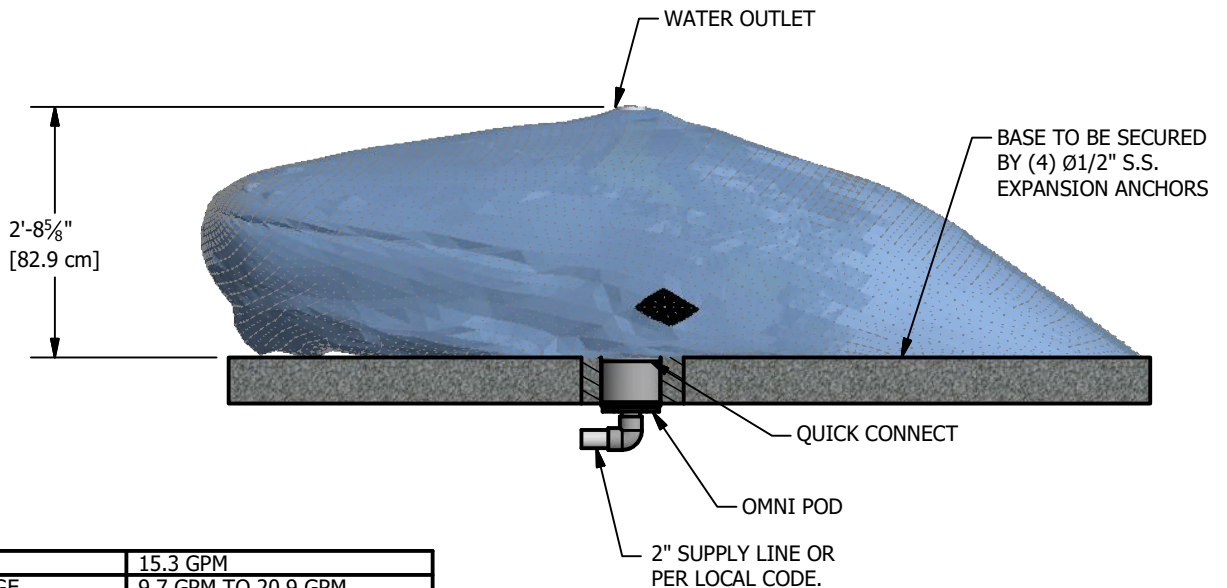
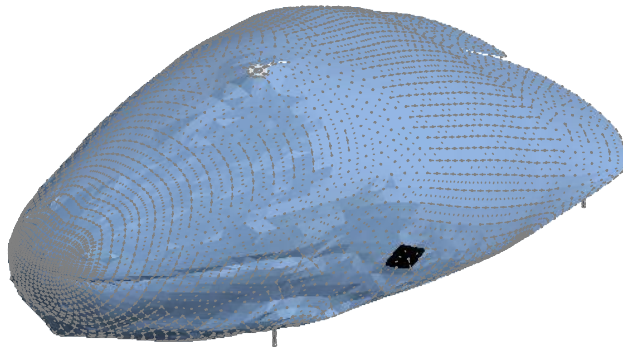
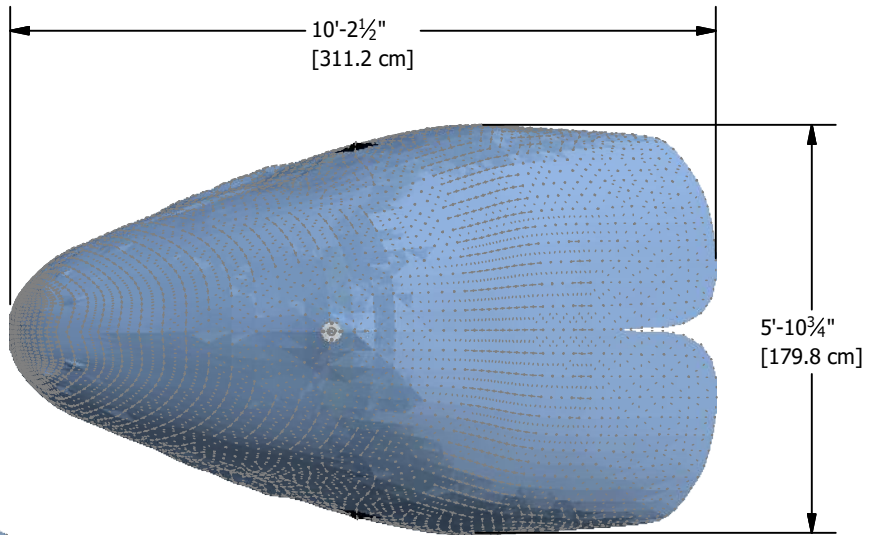
2

1

NOTE:

- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 20.9 GPM.
- #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
- #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.
- #4 SUPPLY LINE TO BE SOLVENT WELDED TO OMNIPOD FEATURE RECIEVER.
- #5 CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.

AREA OF INFLUENCE:
11' L X 6' W
VARIES WITH FLOW



INTENDED FLOW	15.3 GPM
GPM OPERATION RANGE	9.7 GPM TO 20.9 GPM
HEAD	36"
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	Yes
NUMBER OF PEOPLE TO INSTALL	2
MANHOURS TO INSTALL	1

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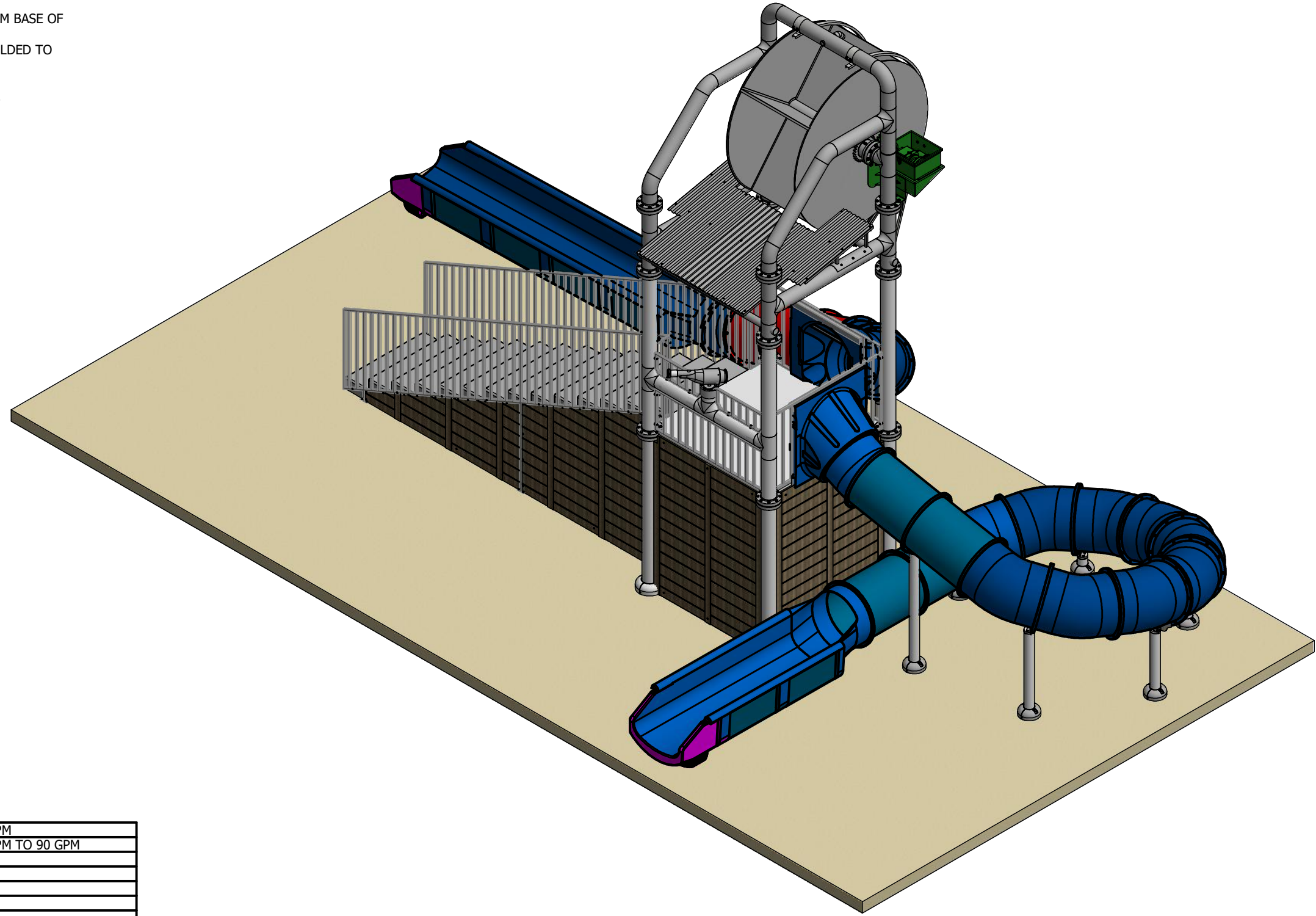
PRODUCT NAME
WHALE HEAD, LOWER PROFILE, MEDIUM SIZE

SHEET 1 OF 1

PRODUCT PART #	REV
WHHD-004-OM	1

NOTE:
 #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 90 GPM.
 #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE STEM BASES.
 #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.
 #4 SUPPLY LINE TO BE SOLVENT WELDED TO OMNIPOD FEATURE RECIEVER.
 #5 CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.

AREA OF INFLUENCE:
 45' L X 30' W
 VARIES WITH FLOW



INTENDED FLOW	62.5 GPM
GPM OPERATION RANGE	21.6 GPM TO 90 GPM
HEAD	25'
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	No
NUMBER OF PEOPLE TO INSTALL	2 AND CRANE
MANHOURS TO INSTALL	96

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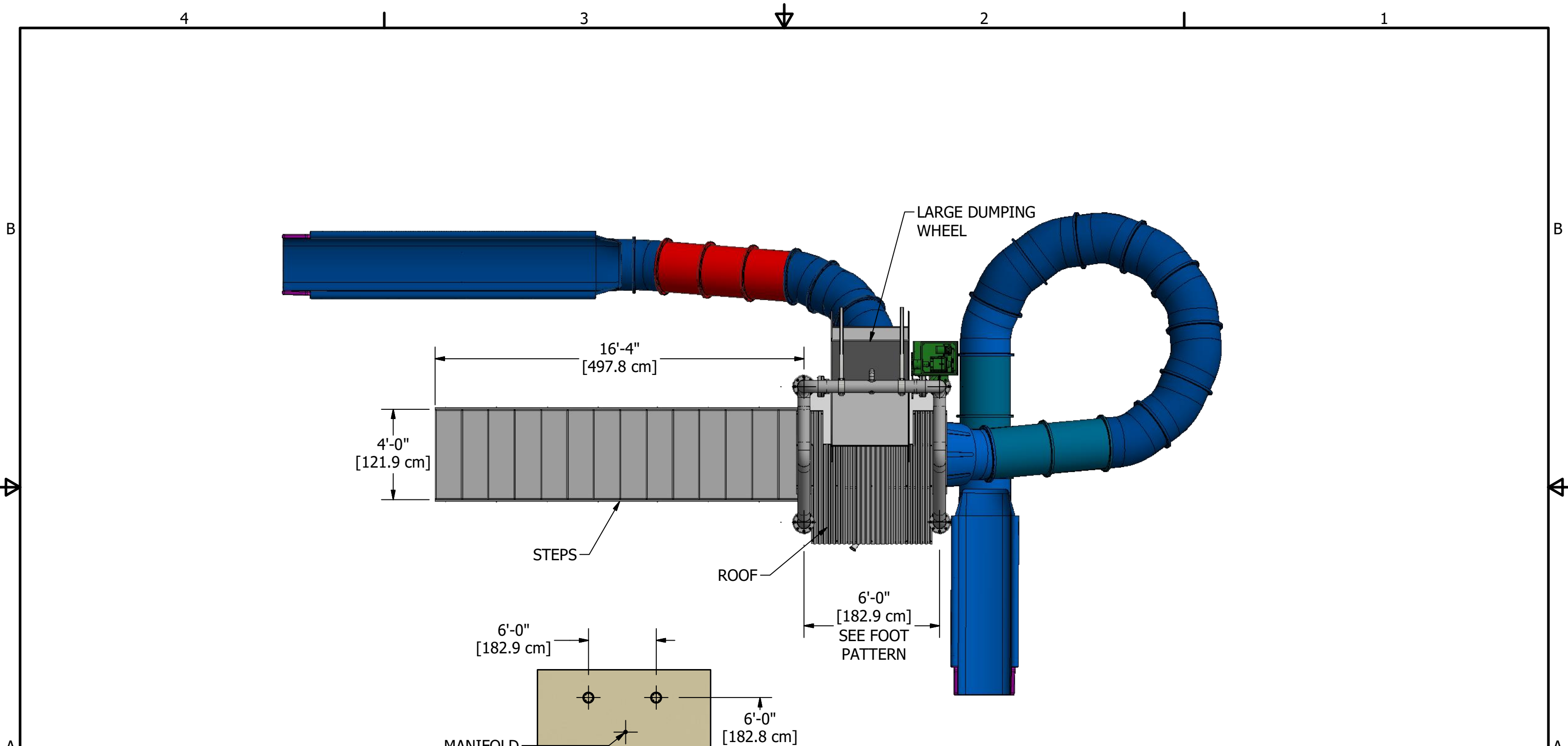
PRODUCT NAME
MONSOON1-201

SHEET 1 OF 5

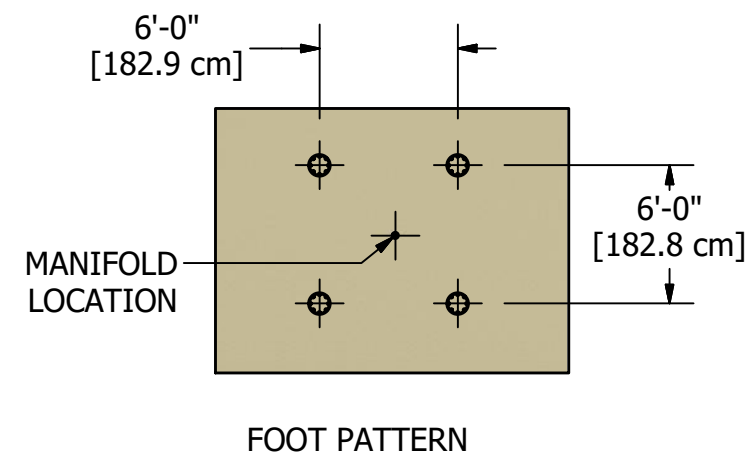
PRODUCT PART #
MONSOON1-121-ZCS1

REV

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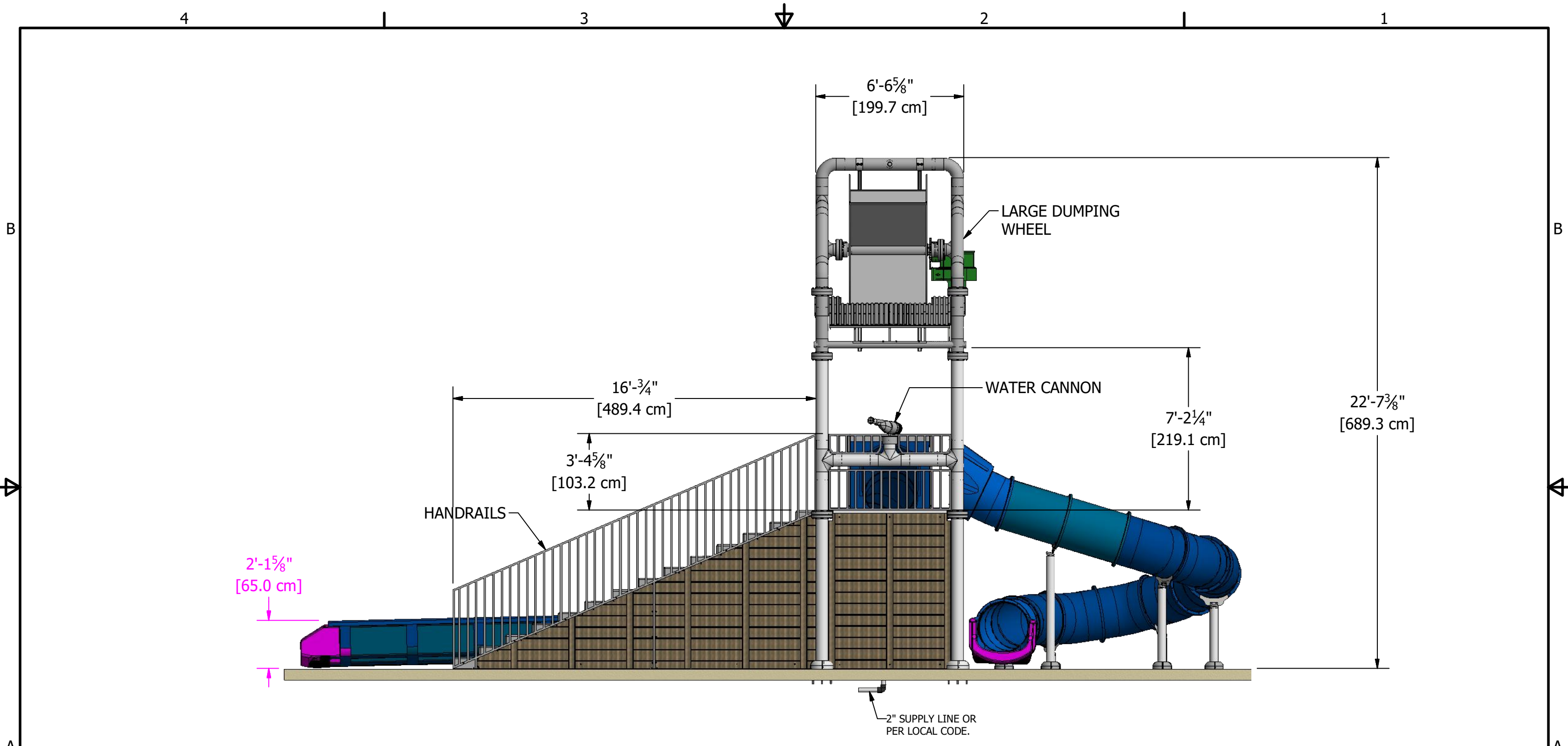
INTENDED FLOW	62.5 GPM
GPM OPERATION RANGE	21.6 GPM TO 90 GPM
HEAD	25'
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	No
NUMBER OF PEOPLE TO INSTALL	2 AND CRANE
MANHOURS TO INSTALL	96



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PRODUCT NAME	MONSOON1-201
SHEET 2 OF 5	PRODUCT PART # MONSOON1-121-ZCS ¹
REV	



INTENDED FLOW	62.5 GPM
GPM OPERATION RANGE	21.6 GPM TO 90 GPM
HEAD	25'
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	No
NUMBER OF PEOPLE TO INSTALL	2 AND CRANE
MANHOURS TO INSTALL	96

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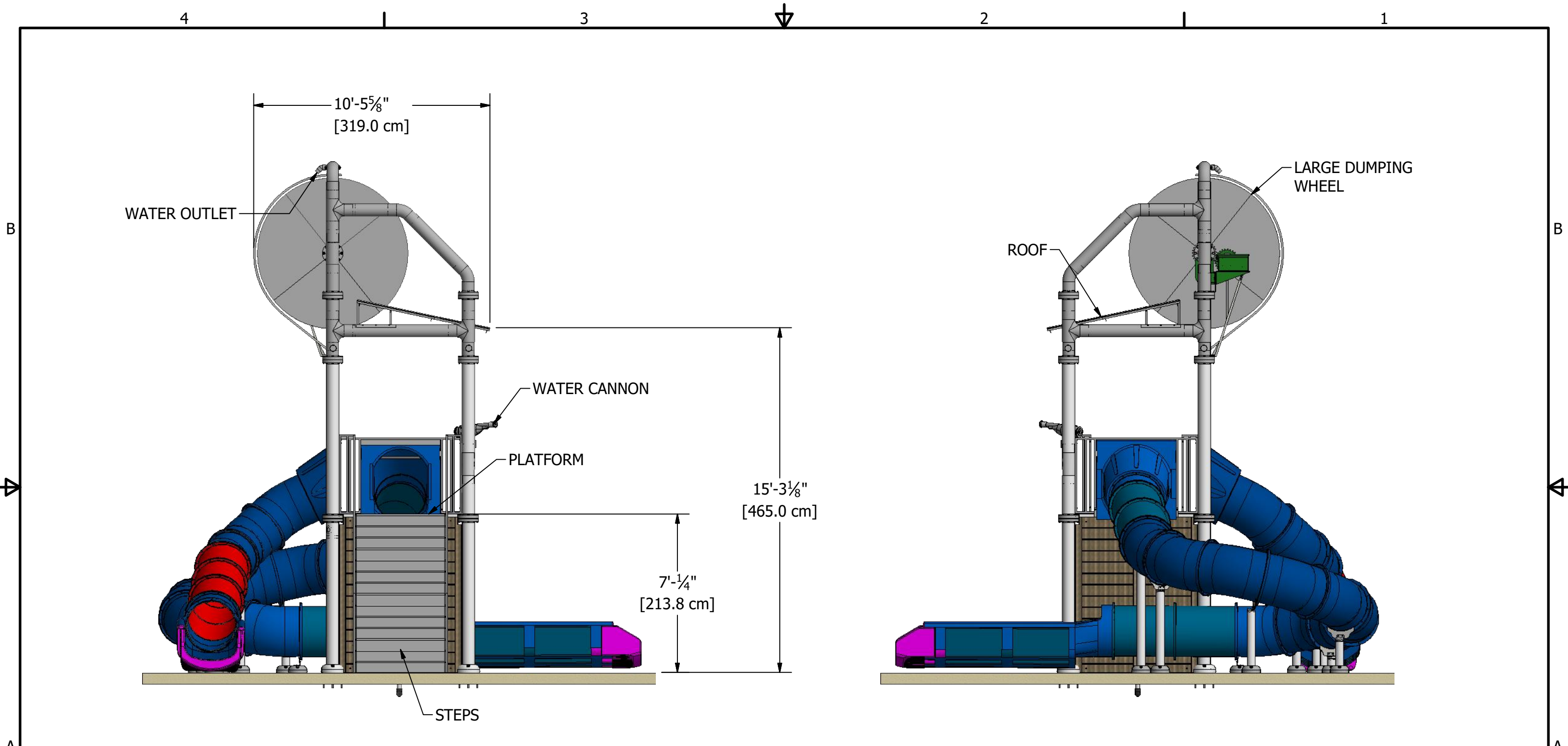
PRODUCT NAME: **MONSOON1-201**

SHEET 3 OF 5

PRODUCT PART #: **MONSOON1-121-ZCS¹**

REV

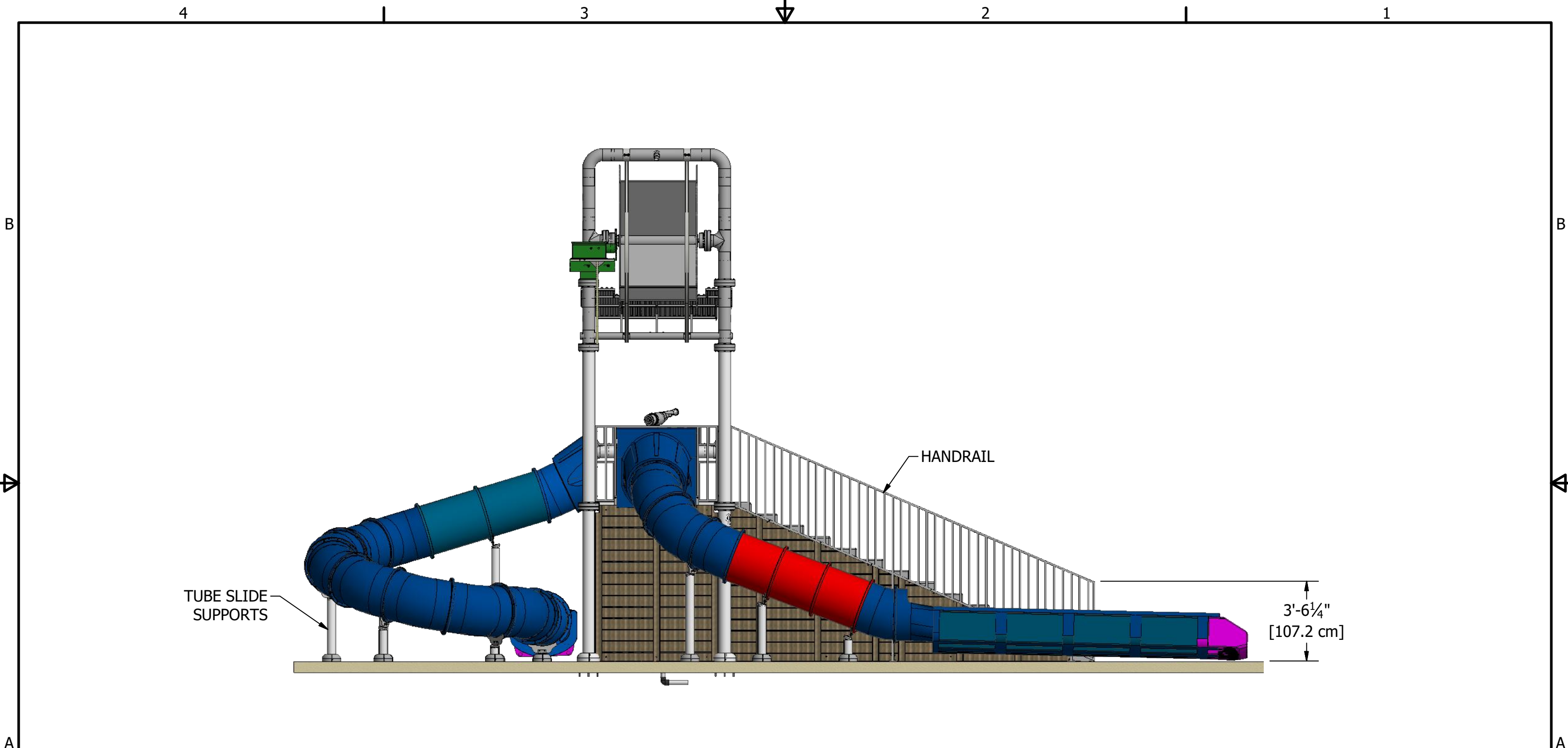
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INTENDED FLOW	62.5 GPM
GPM OPERATION RANGE	21.6 GPM TO 90 GPM
HEAD	25'
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	No
NUMBER OF PEOPLE TO INSTALL	2 AND CRANE
MANHOURS TO INSTALL	96



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PRODUCT NAME	MONSOON1-201
SHEET 4 OF 5	PRODUCT PART # MONSOON1-121-ZCS1
REV	



TUBE SLIDE
SUPPORTS

HANDRAIL

3'-6 1/4"
[107.2 cm]

INTENDED FLOW	62.5 GPM
GPM OPERATION RANGE	21.6 GPM TO 90 GPM
HEAD	25'
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	No
NUMBER OF PEOPLE TO INSTALL	2 AND CRANE
MANHOURS TO INSTALL	96

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PRODUCT NAME: **MONSOON1-201**

SHEET 5 OF 5

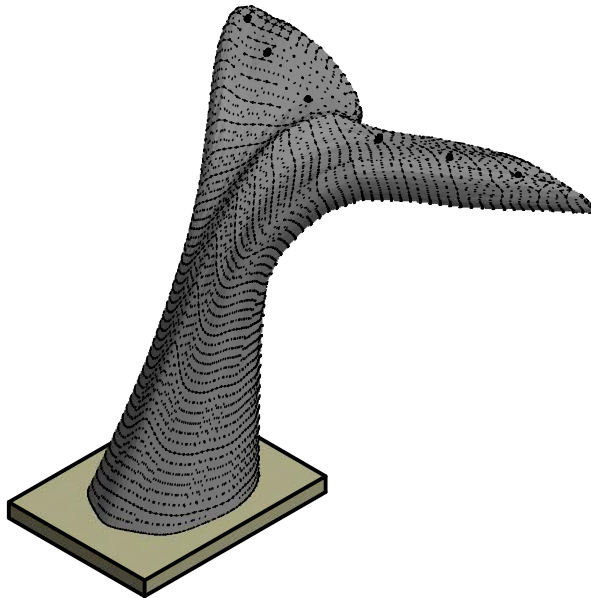
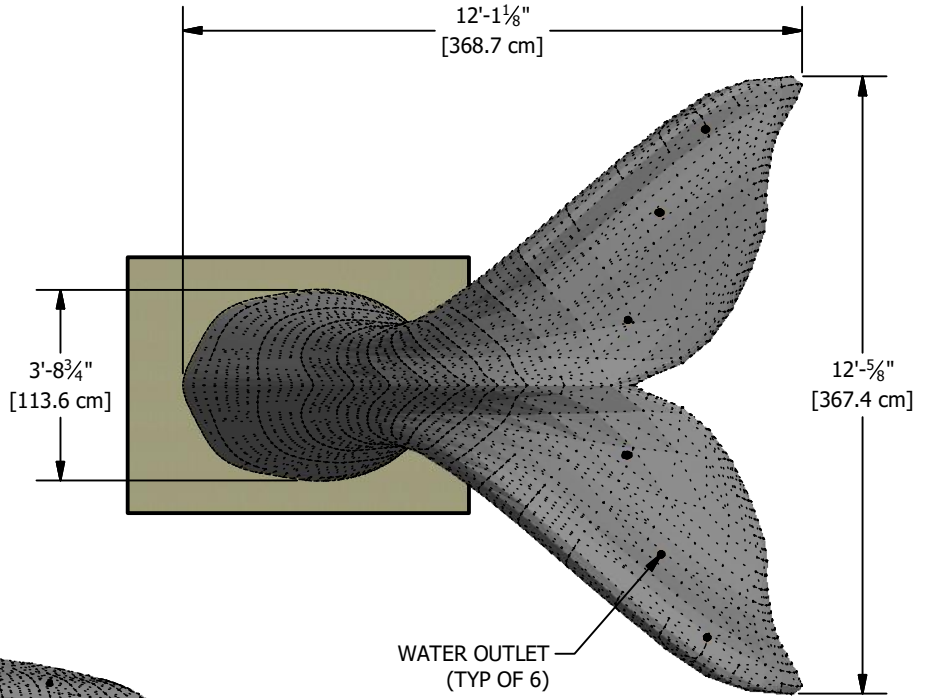
PRODUCT PART #: **MONSOON1-121-ZCS1**

REV

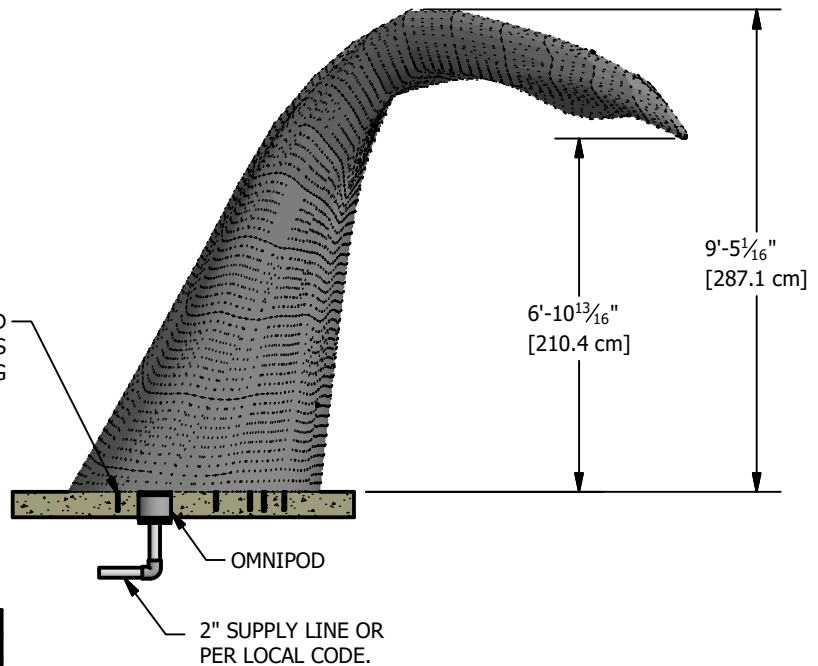
NOTE:

- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 15 GPM.
- #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
- #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.
- #4 SUPPLY LINE TO BE SOLVENT WELDED TO OMNIPOD FEATURE RECIEVER.
- #5 CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.

AREA OF INFLUENCE:
10' DIAMETER
VARIES WITH FLOW



TO BE SECURED
BY EXPANSION ANCHORS
INTERNAL MOUNTING



INTENDED FLOW	10 GPM
GPM OPERATION RANGE	5 GPM TO 15 GPM
HEAD	11'
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	Yes
NUMBER OF PEOPLE TO INSTALL	2
MANHOURS TO INSTALL	6

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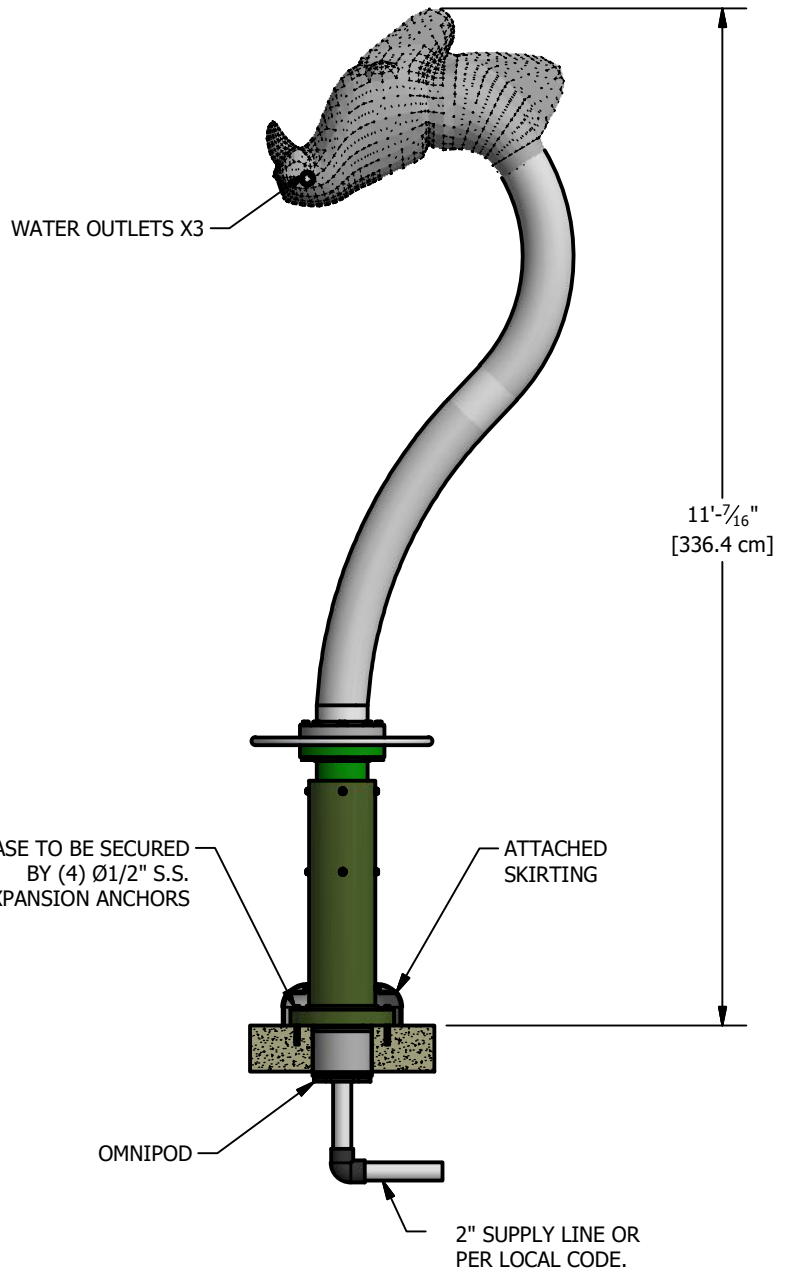
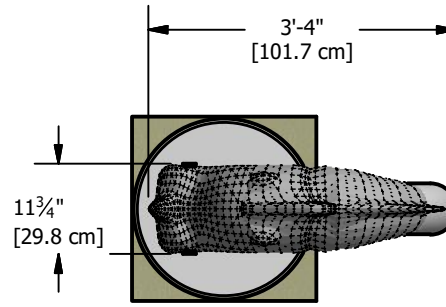
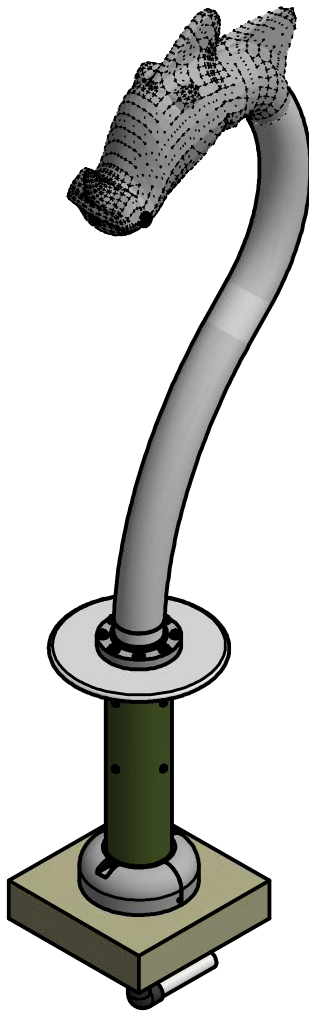
PRODUCT NAME
WHALE TAIL 9 FT OMNI

SHEET 1 OF 1

PRODUCT PART #
WHTL-004-OM


REV
1

AREA OF INFLUENCE:
10' DIAMETER
VARIES WITH FLOW



- NOTE:
- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 15.5 GPM.
 - #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
 - #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.
 - #4 SUPPLY LINE TO BE SOLVENT WELDED TO OMNIPOD FEATURE RECIEVER.
 - #5 CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.

INTENDED FLOW	11.4 GPM
GPM OPERATION RANGE	7.2 GPM TO 15.5 GPM
HEAD	12'
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	Yes
NUMBER OF PEOPLE TO INSTALL	2
MANHOURS TO INSTALL	2

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	PRODUCT NAME <h2 style="margin: 0;">SERPENT CANNON, OMNI</h2>		PRODUCT PART # SSCN-001-OM	REV 1

2

1

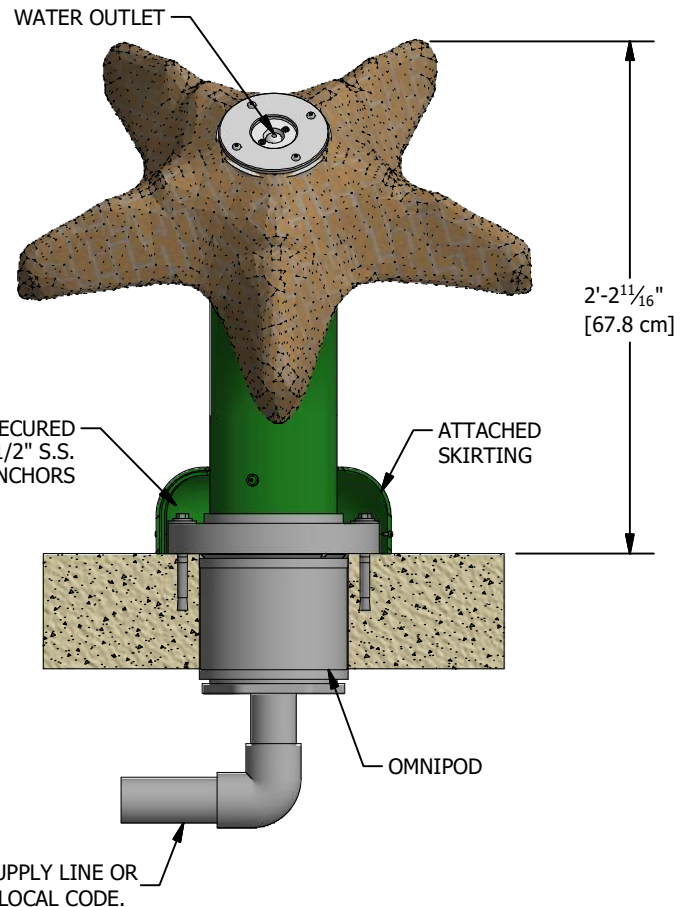
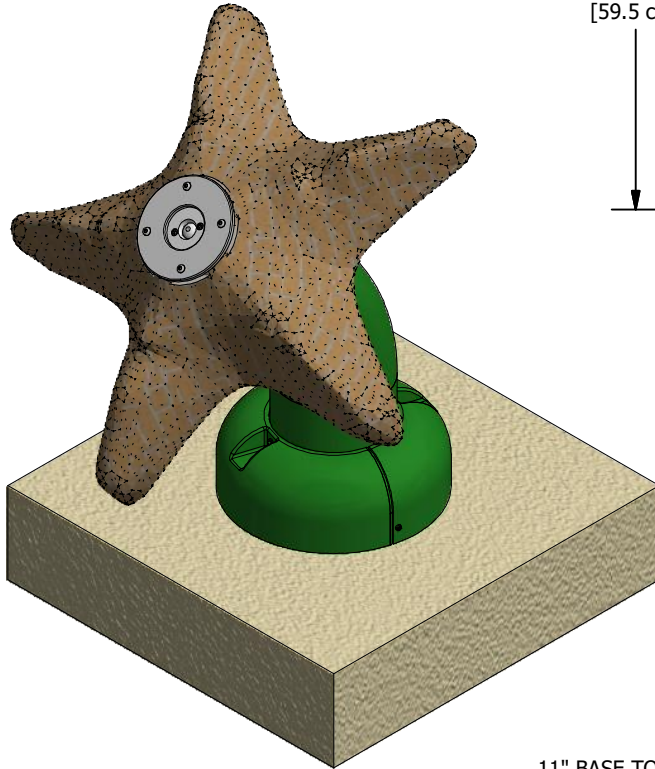
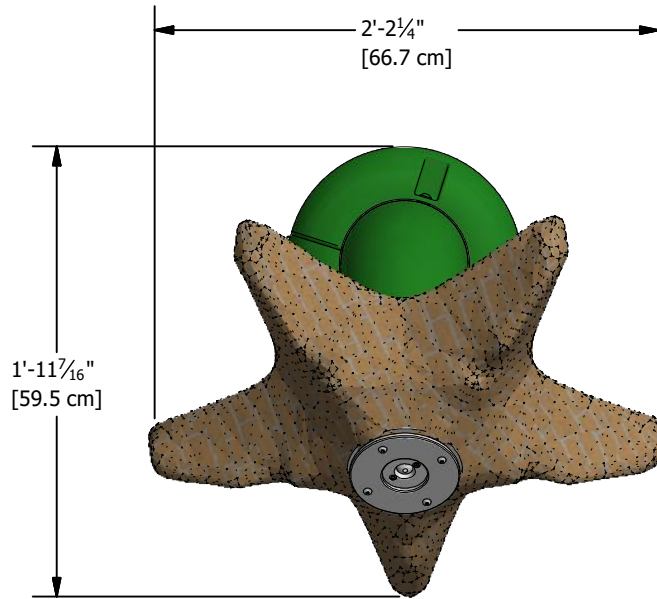
NOTE:

- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 2.3 GPM.
- #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
- #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.
- #4 SUPPLY LINE TO BE SOLVENT WELDED TO OMNIPOD FEATURE RECIEVER.
- #5 CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.

AREA OF INFLUENCE:
6' DIAMETER
VARIES WITH FLOW

B

B



A

A

INTENDED FLOW	1.7 GPM
GPM OPERATION RANGE	1.1 GPM TO 2.3 GPM
HEAD	5'
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	Yes
NUMBER OF PEOPLE TO INSTALL	1
MANHOURS TO INSTALL	1

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PRODUCT NAME
SPINNING STARFISH OMNI

SHEET 1 OF 1

PRODUCT PART #	REV
SPSF-001-OM	1

2

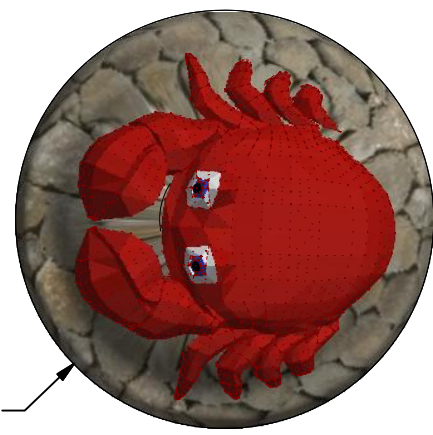
1

2

1

AREA OF INFLUENCE:
6' DIAMETER
VARIES WITH FLOW

- NOTE:
- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 5.2 GPM.
 - #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
 - #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.
 - #4 SUPPLY LINE TO BE SOLVENT WELDED TO OMNIPOD FEATURE RECIEVER.
 - #5 CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.



Ø2'-2 1/8"
[Ø66.3 cm]



WATER OUTLET
(TYP OF 2)

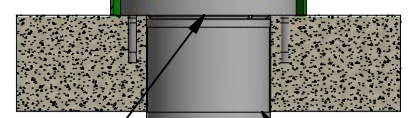


3'-3 11/16"
[100.8 cm]

Ø6 5/8"
[16.8 cm]

11" BASE TO BE SECURED
BY (4) 1/2" S.S.
EXPANSION ANCHORS

ATTACHED
SKIRTING




QUICK CONNECT

OMNIPOD

2" SUPPLY LINE OR
PER LOCAL CODE.

INTENDED FLOW	3.8 GPM
GPM OPERATION RANGE	2.4 GPM TO 5.2 GPM
HEAD	5"
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	Yes
NUMBER OF PEOPLE TO INSTALL	1
MANHOURS TO INSTALL	1

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2

1

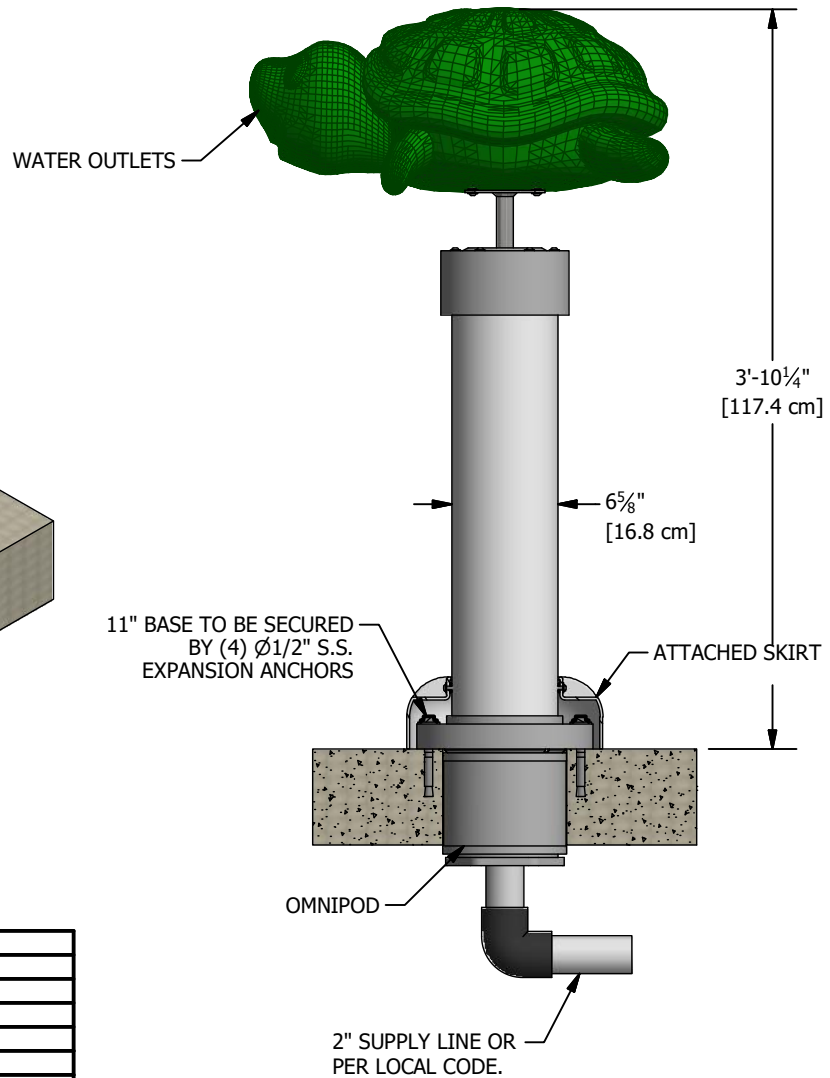
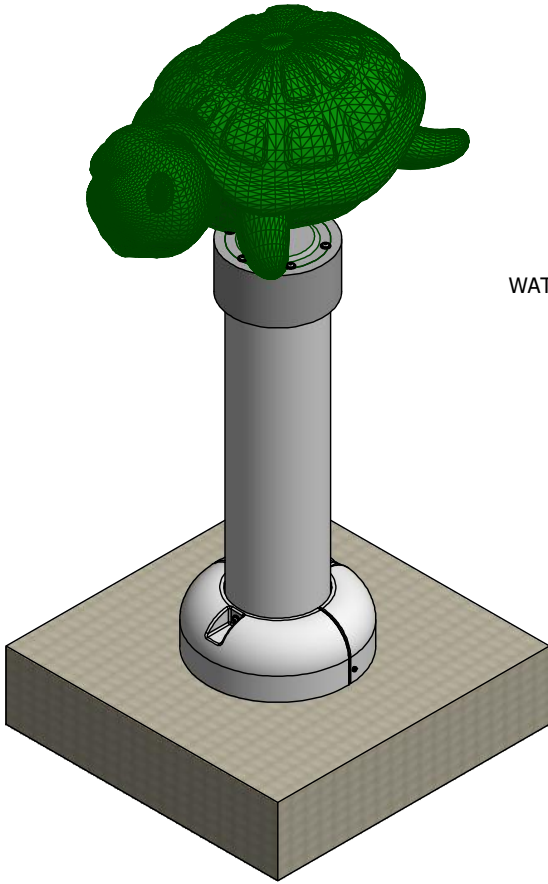
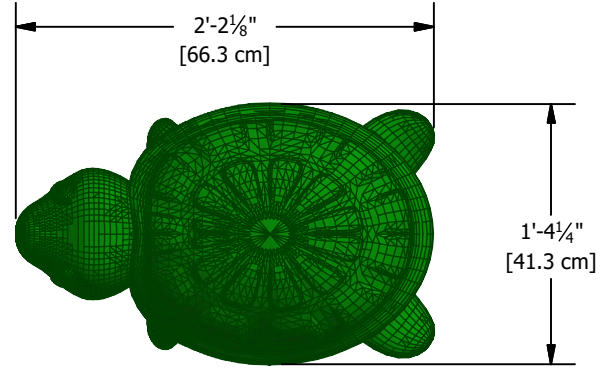
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1

AREA OF INFLUENCE:
6' DIAMETER
VARIES WITH FLOW

NOTE:

- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 3.4 GPM.
- #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
- #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.
- #4 SUPPLY LINE TO BE SOLVENT WELDED TO OMNIPOD FEATURE RECEIVER.
- #5 CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.



INTENDED FLOW	2.5 GPM
GPM OPERATION RANGE	1.6 GPM TO 3.4 GPM
HEAD	8'
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	Yes
NUMBER OF PEOPLE TO INSTALL	1
MANHOURS TO INSTALL	2

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PRODUCT NAME
WATER FUN CANNON TURTLE

SHEET 1 OF 1

PRODUCT PART #
WFCN-023-OM-ZCS

REV
1

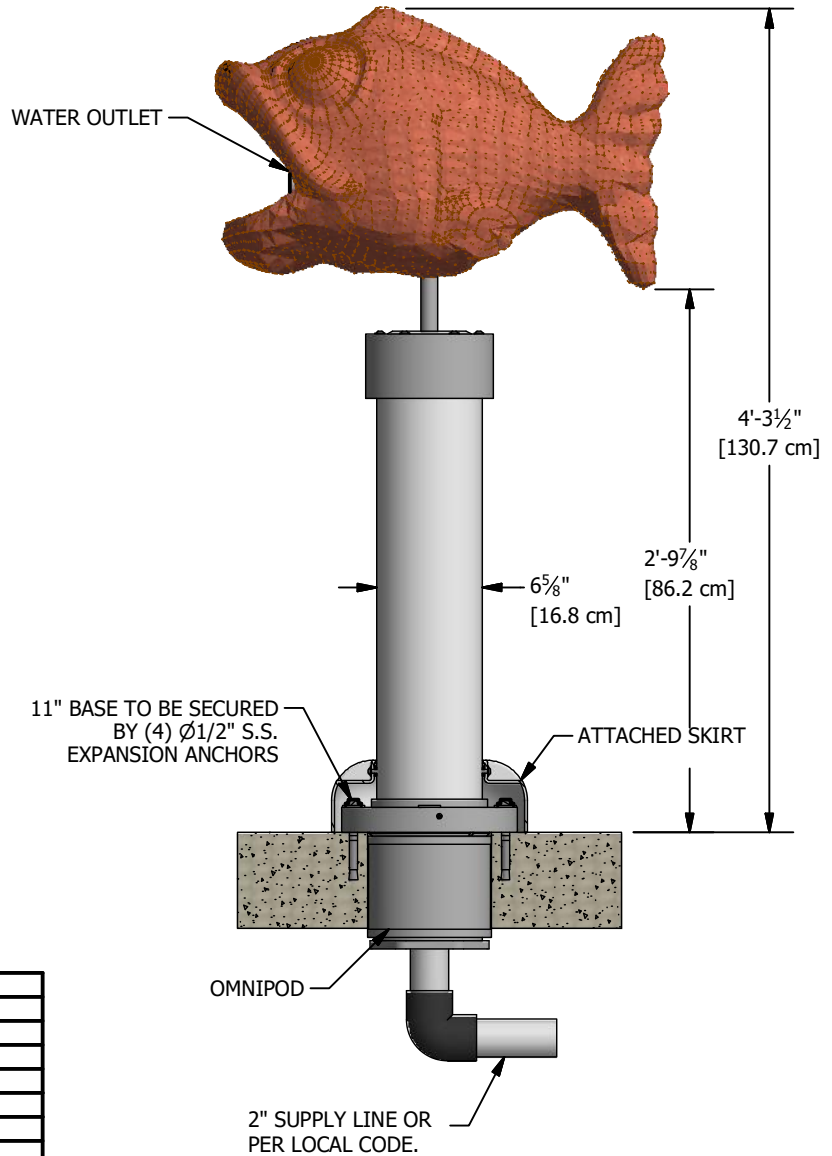
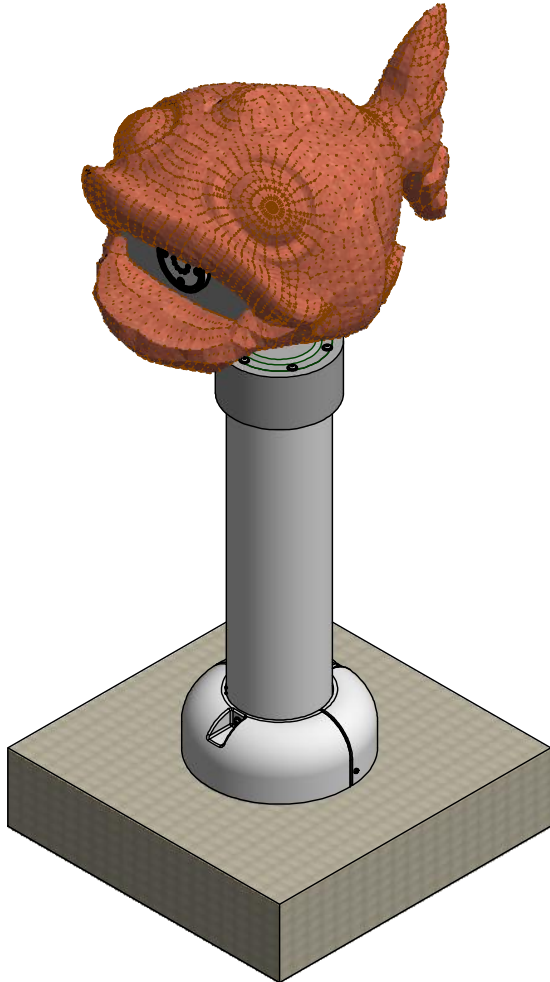
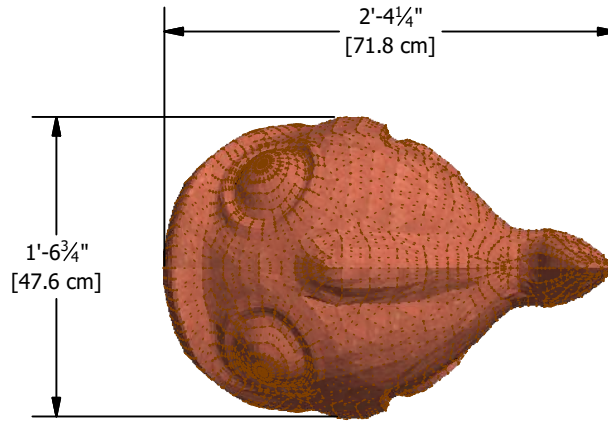
2

1

AREA OF INFLUENCE:
6' DIAMETER
VARIES WITH FLOW

NOTE:

- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 3.4 GPM.
- #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
- #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.
- #4 SUPPLY LINE TO BE SOLVENT WELDED TO OMNIPOD FEATURE RECEIVER.
- #5 CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.



INTENDED FLOW	2.5 GPM
GPM OPERATION RANGE	1.6 GPM TO 3.4 GPM
HEAD	8'
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	Yes
NUMBER OF PEOPLE TO INSTALL	1
MANHOURS TO INSTALL	2

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PRODUCT NAME
WATER FUN CANNON FISH OMNI

SHEET 1 OF 1

PRODUCT PART #
WFCN-023-OM

REV
1

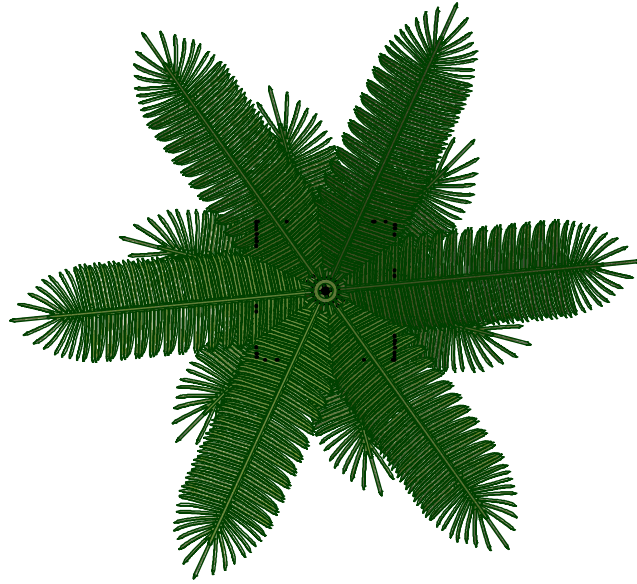
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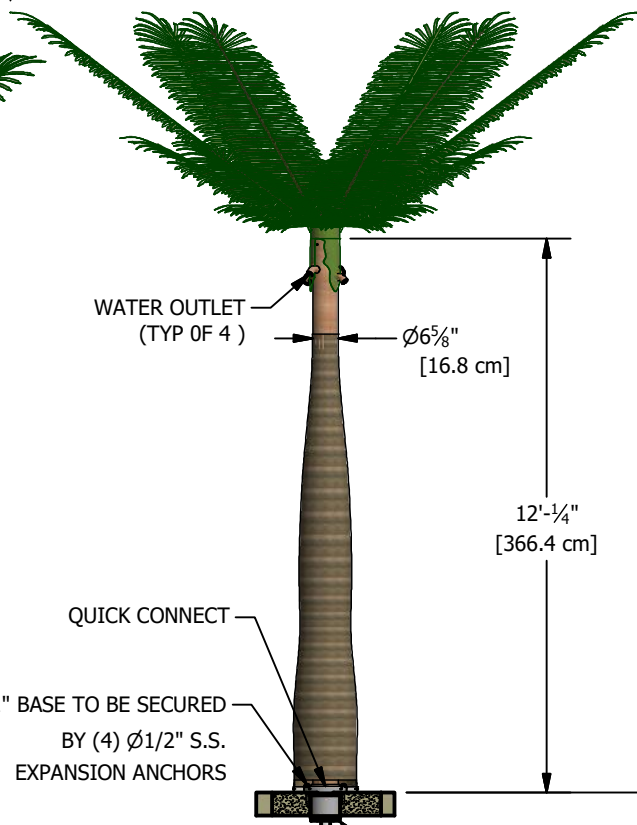
NOTE:

- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 9.2 GPM.
- #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
- #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.
- #4 SUPPLY LINE TO BE STUBBED UP THROUGH THE CONCRETE AND FIELD CUT TO CONNECT THE WATER FEATURE ACCORDINGLY.
- #5 CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.

AREA OF INFLUENCE:
12' DIAMETER
VARIES WITH FLOW



13'-8 1/8" APPROX
[416.8 cm]



WATER OUTLET (TYP OF 4)
Ø6 5/8" [16.8 cm]

11" BASE TO BE SECURED BY (4) Ø1/2" S.S. EXPANSION ANCHORS

12'-1/4" [366.4 cm]

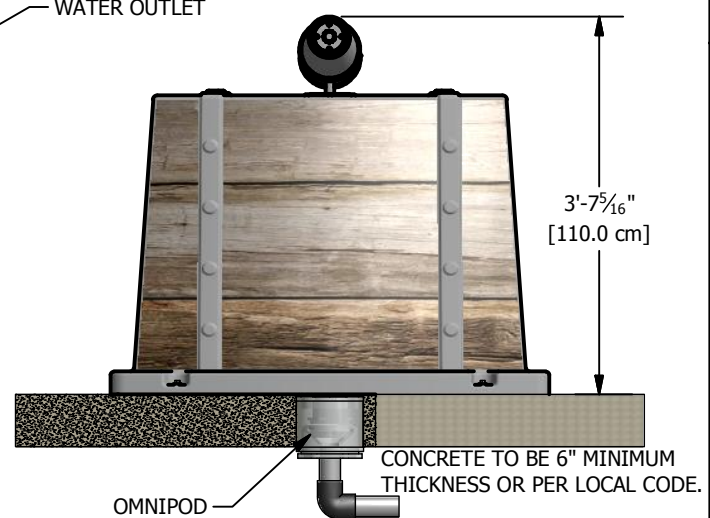
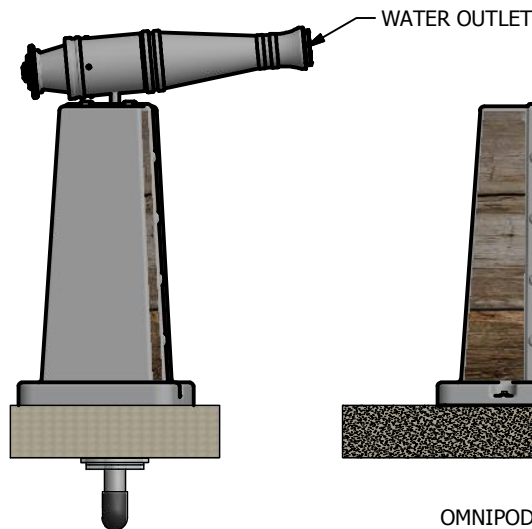
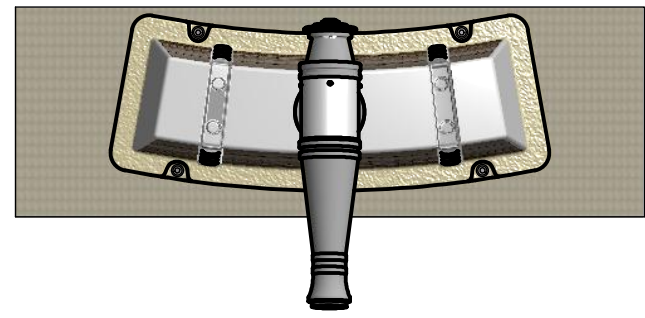
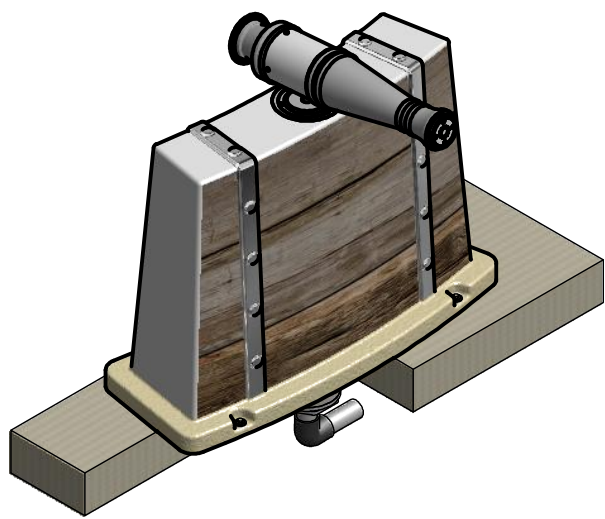
16'-11 1/8" APPROX [516.0 cm]

OMNIPOD
2" SUPPLY OR PER LOCAL CODE

INTENDED FLOW	6.7 GPM
GPM OPERATION RANGE	4.3 GPM TO 9.2 GPM
HEAD	12'
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	Yes
NUMBER OF PEOPLE TO INSTALL	2
MANHOURS TO INSTALL	2

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	<p>PRODUCT NAME PALM TREE SWANKEY OMNI</p>		<p>PRODUCT PART # PLMT-005-OM</p>	<p>REV 1</p>

AREA OF INFLUENCE:
15' L X 15' W
VARIES WITH FLOW



- NOTE:
- #1 DO NOT EXCEED THE INTENDED FLOW RATE OF 3.7 GPM.
 - #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
 - #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.

GPM OPERATION RANGE	2 TO 3.7
HEAD	6'
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	Yes
NUMBER OF PEOPLE TO INSTALL	2
MANHOURS TO INSTALL	2

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PRODUCT NAME
WALL CITY CANNON-OMNIPOD

SHEET 1 OF 1

PRODUCT PART #
WFCN-014-OM

REV
1

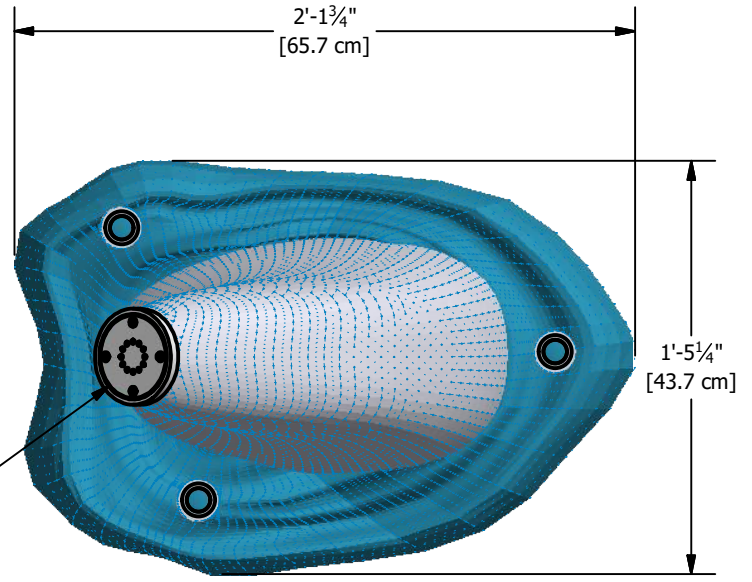
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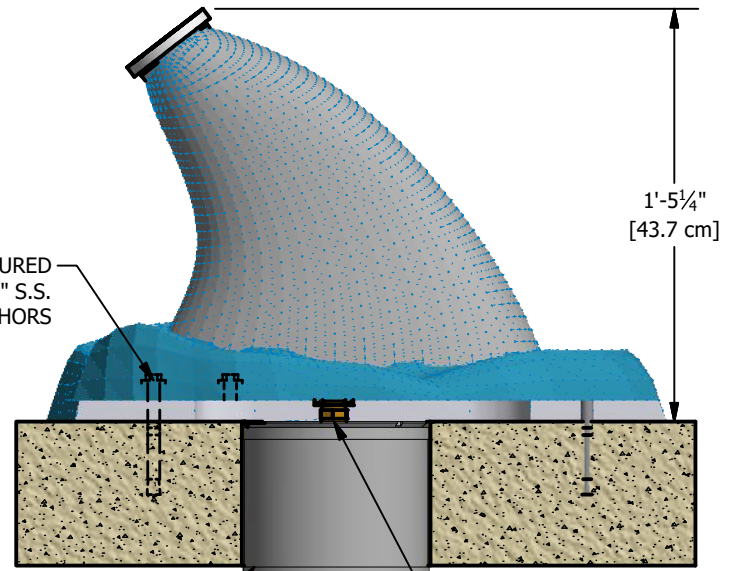
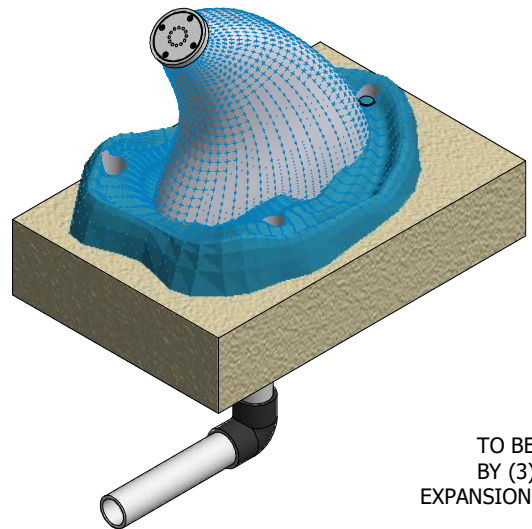
AREA OF INFLUENCE:
6' DIAMETER
VARIES WITH FLOW

NOTE:

- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 15.6 GPM.
- #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
- #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.
- #4 SUPPLY LINE TO BE SOLVENT WELDED TO OMNIPOD FEATURE RECEIVER.
- #5 CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.



WATER OUTLET



TO BE SECURED BY (3) 1/2" S.S. EXPANSION ANCHORS

OMNIPOD

QUICK CONNECT

2" SUPPLY LINE OR PER LOCAL CODE.

INTENDED FLOW	11.4 GPM
GPM OPERATION RANGE	7.3 GPM TO 15.6 GPM
HEAD	5'
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	Yes
NUMBER OF PEOPLE TO INSTALL	1
MANHOURS TO INSTALL	1

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PRODUCT NAME
CREATURE FEATURE SHARK FIN OMNIPOD

SHEET 1 OF 1	
PRODUCT PART #	REV
CFFN-001-OM	1

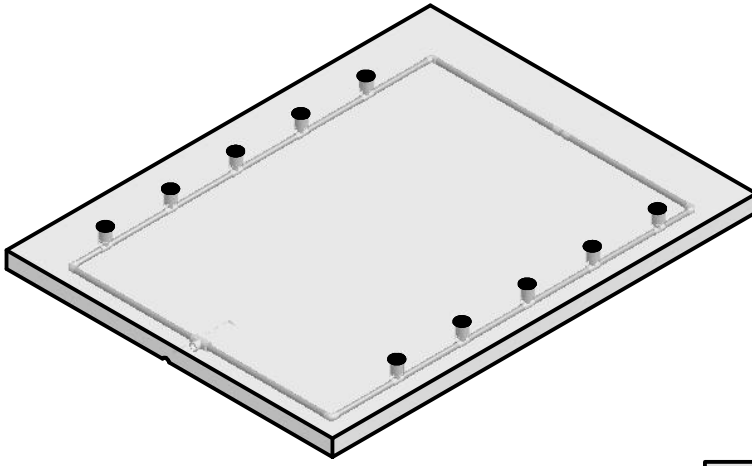
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1

2

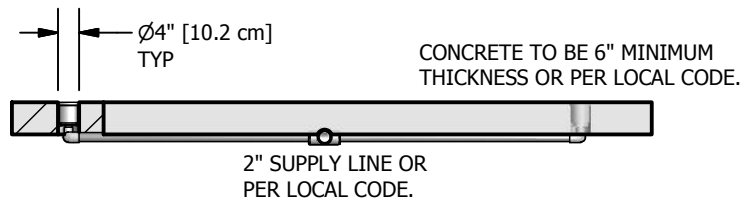
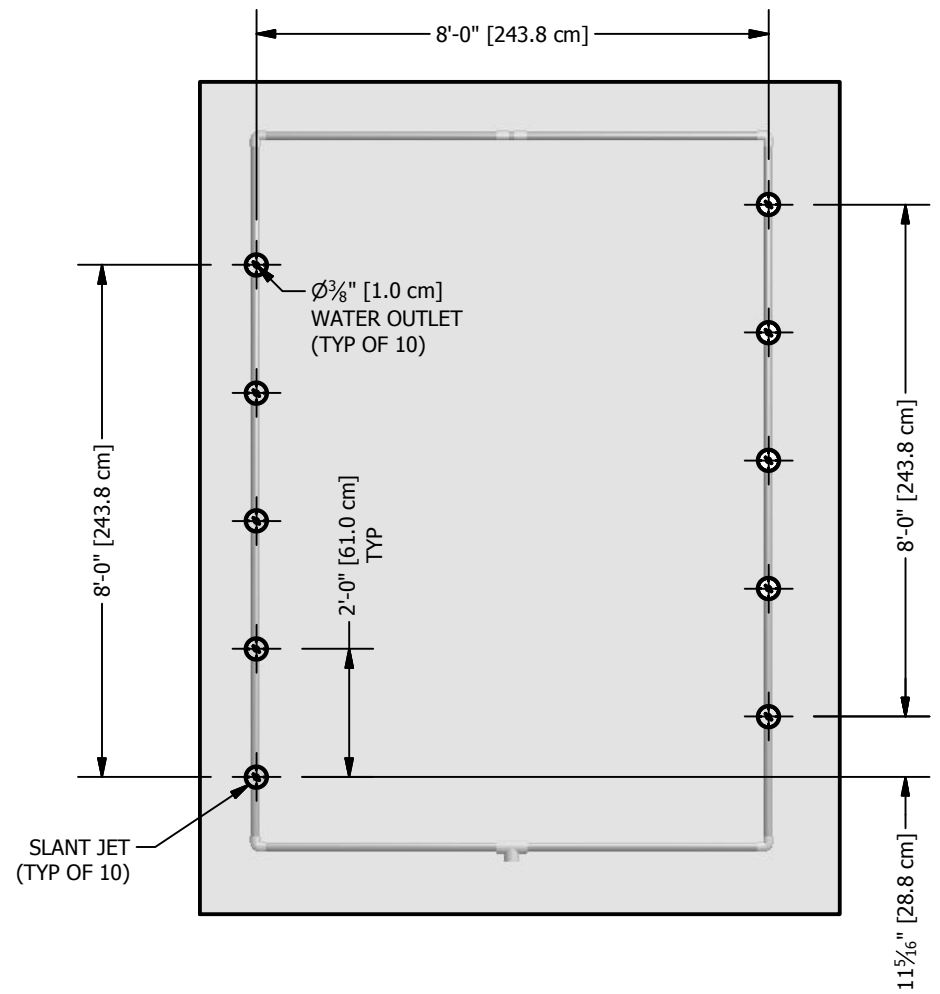
1

AREA OF INFLUENCE:
16' L X 16' W
VARIES WITH FLOW



B

B



- NOTE:
- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 51.6 GPM.
 - #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
 - #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.

INTENDED FLOW	37.9 GPM
GPM OPERATION RANGE	24.1 GPM TO 51.6 GPM
HEAD	3'
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	No
NUMBER OF PEOPLE TO INSTALL	1
MANHOURS TO INSTALL	3

A

A

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PRODUCT NAME
SHOWER TUNNEL

SHEET 1 OF 1

PRODUCT PART #
SHWT-004

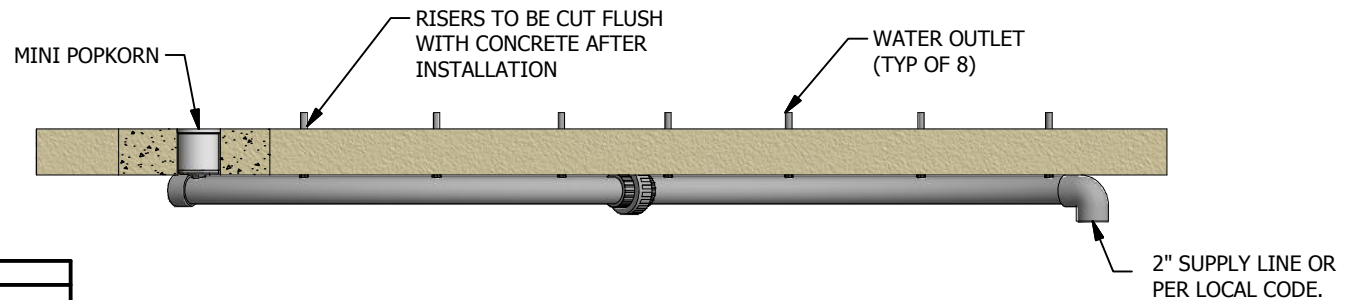
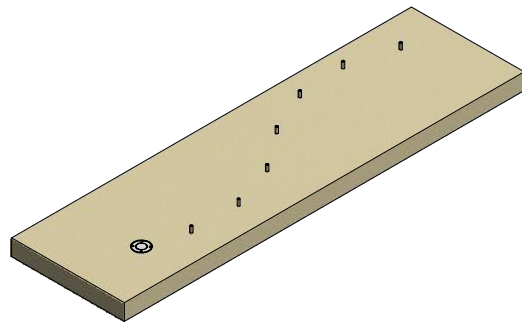
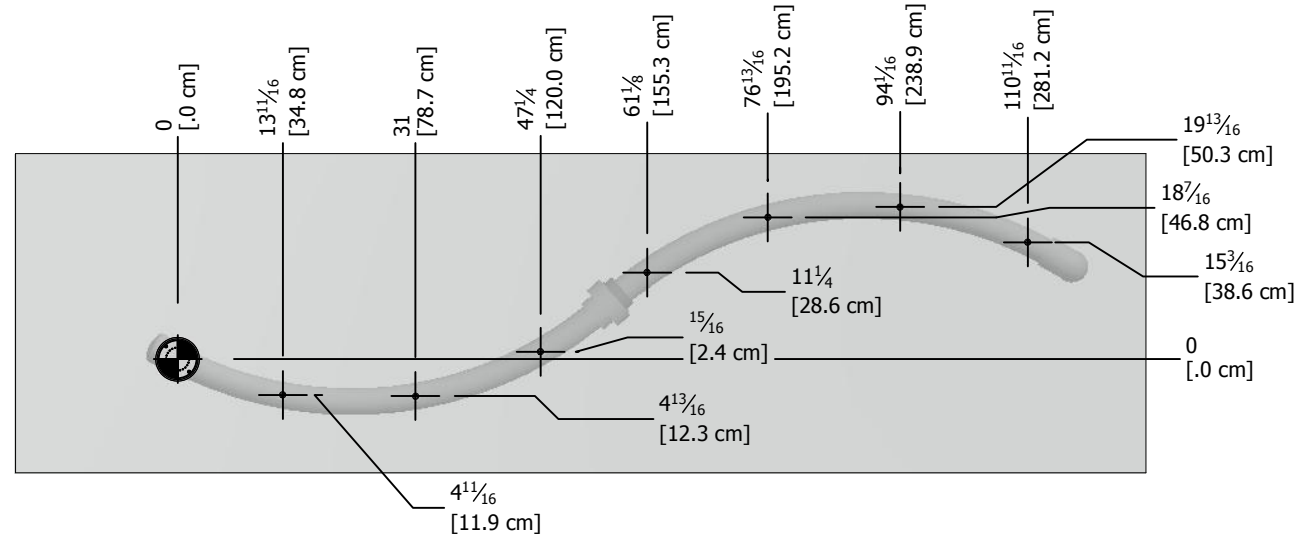
REV
1

2

1

- NOTE:
- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 57 GPM.
 - #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER FEATURE.
 - #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.
 - #4 CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.

AREA OF INFLUENCE:
16' L X 8' W
VARIES WITH FLOW



INTENDED FLOW	41.7 GPM
GPM OPERATION RANGE	26.6 GPM TO 57 GPM
HEAD	3'
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	No
NUMBER OF PEOPLE TO INSTALL	1
MANHOURS TO INSTALL	2

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PRODUCT NAME

SPRAY BRIGADE-POPKORN

SHEET 1 OF 1

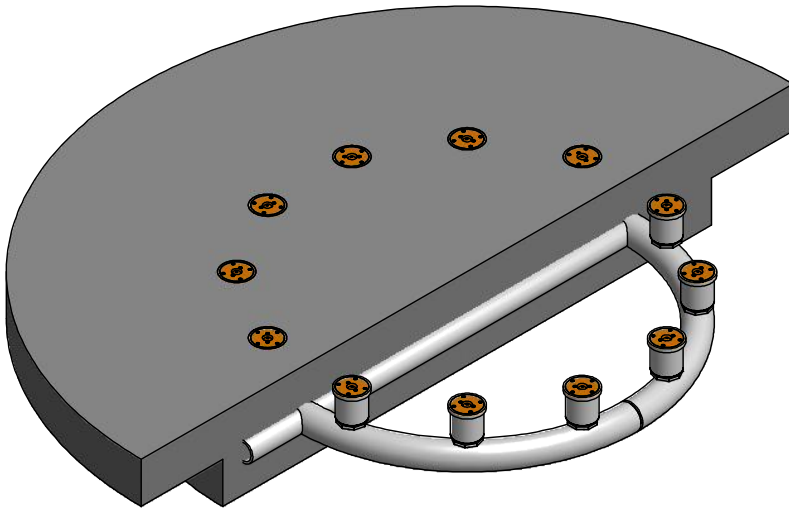
PRODUCT PART #

SPBG-003

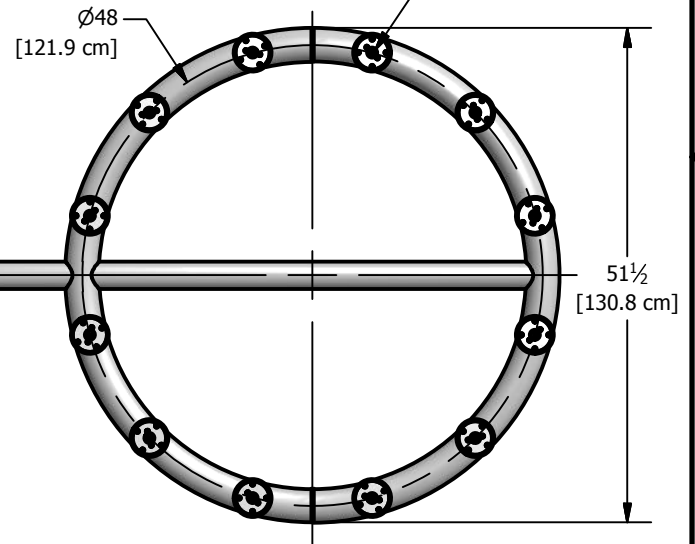
REV

1

AREA OF INFLUENCE:
8' DIAMETER
VARIES WITH FLOW



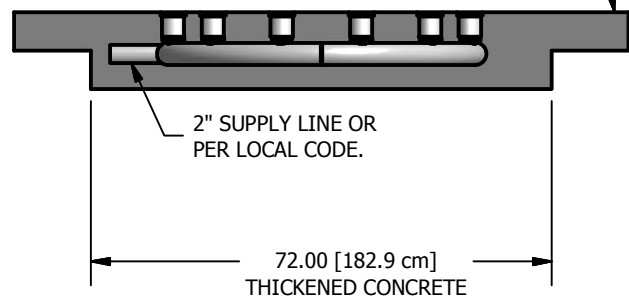
(12) 1/4" BALL NOZZLES ENCAPSULATED IN HOUSING WITH HDPE COVER. NOZZLE TO BE ADJUSTED IN FIELD FOR CORRECT ANGLE.



NOTE:

- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 28 GPM.
- #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
- #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.

CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.



INTENDED FLOW	20.2 GPM
GPM OPERATION RANGE	13 GPM TO 28 GPM
HEAD	3'
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	No
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	No
NUMBER OF PEOPLE TO INSTALL	1
MANHOURS TO INSTALL	2

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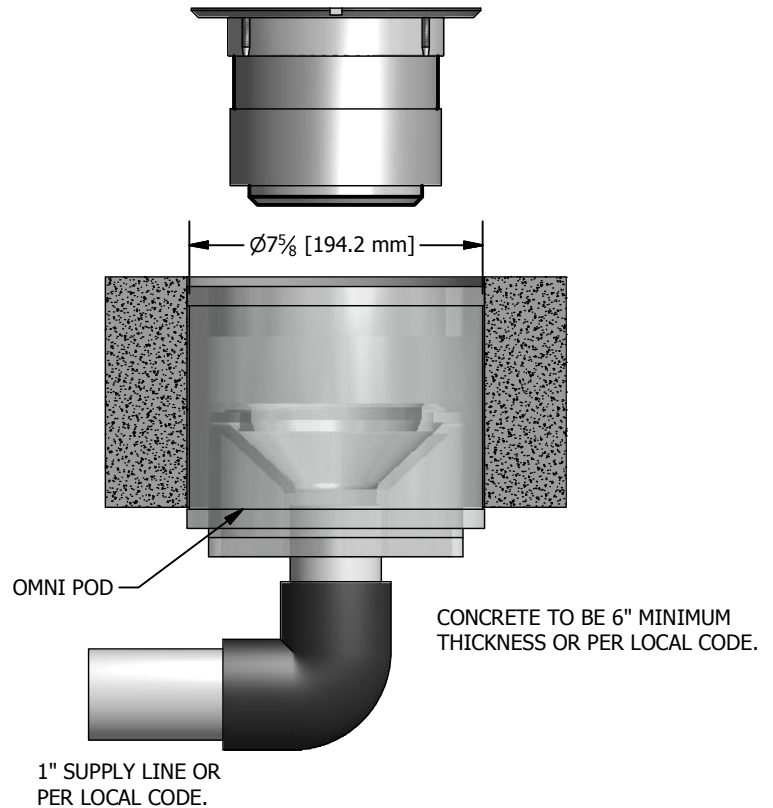
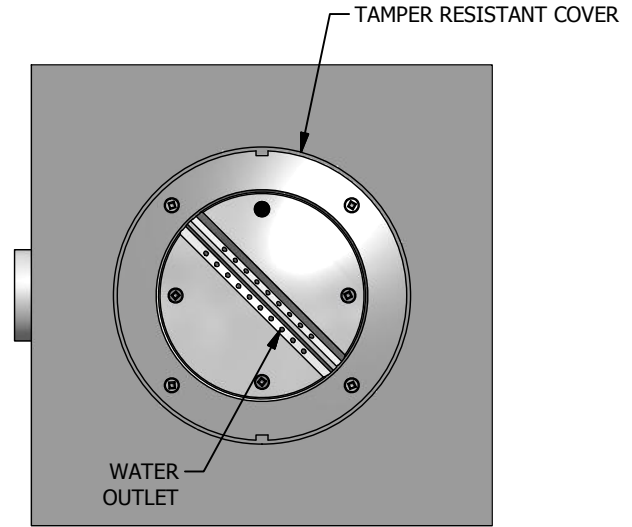
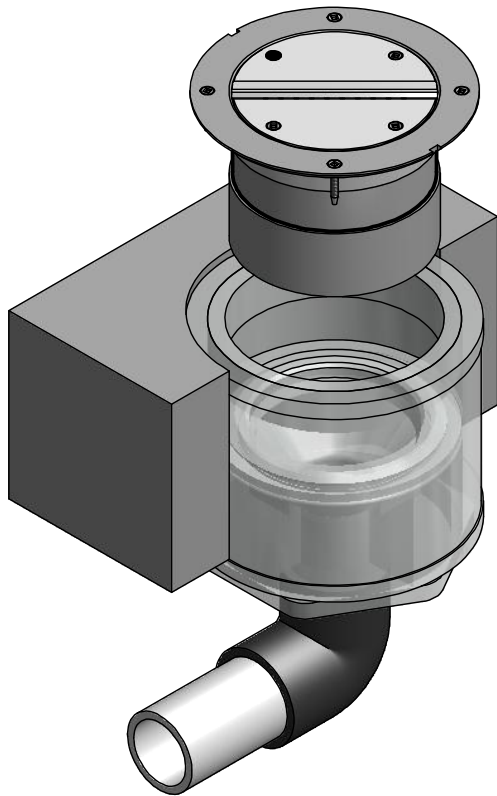
PRODUCT NAME
CIRCLE TIME-12 OUTLETS

SHEET 1 OF 1

PRODUCT PART #
CIRT-012

REV
1

AREA OF INFLUENCE:
3' DIAMETER
VARIES WITH FLOW



NOTE:
#1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 15 GPM.
#2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
#3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.

INTENDED FLOW	8 GPM
GPM OPERATION RANGE	5.1 GPM TO 15 GPM
HEAD	3'
MINIMUM SUPPLY LINE SIZE	1"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	Yes
NUMBER OF PEOPLE TO INSTALL	1
MANHOURS TO INSTALL	0.5

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PRODUCT NAME
SLANT FINGER JET-OMNIPOD

SHEET 1 OF 1

PRODUCT PART #
SFJT-003-LF-OM-ZCS

REV
1

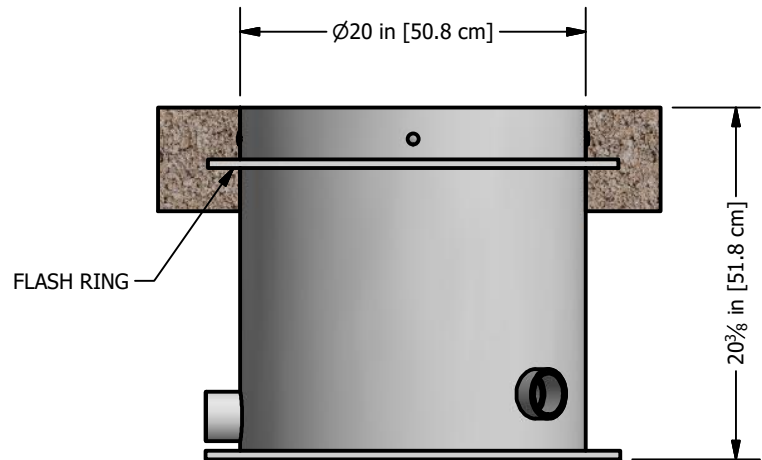
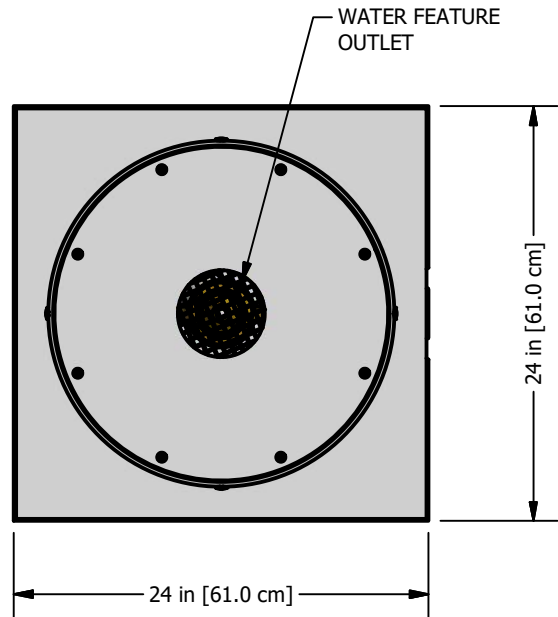
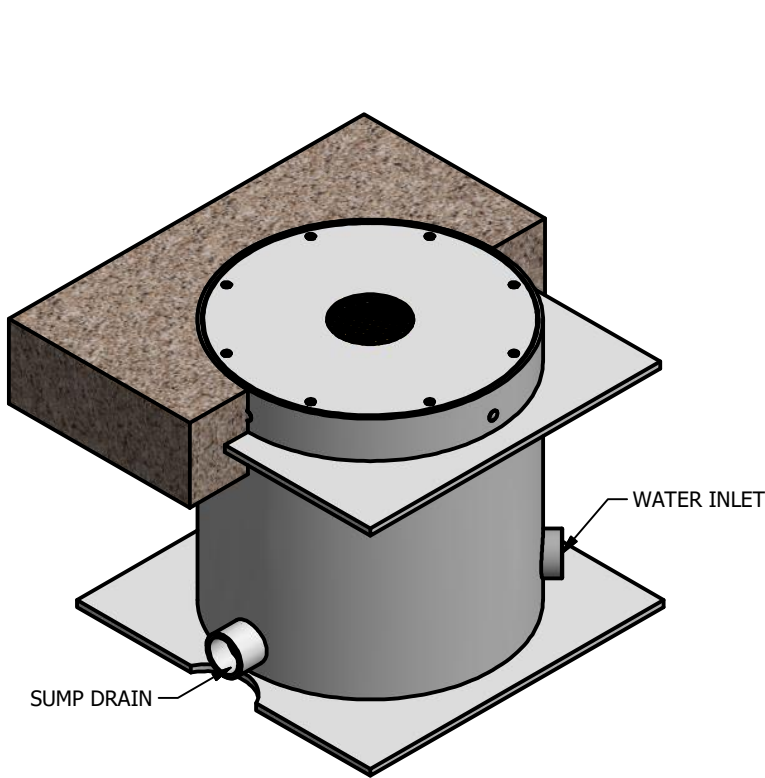
WARNING:

DO NOT EXCEED THE MAXIMUM FLOW RATE OF 42 GPM.


AREA OF INFLUENCE:
6' DIAMETER
VARIES WITH FLOW

NOTE:

- #1 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
- #2 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.
- #3 CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.



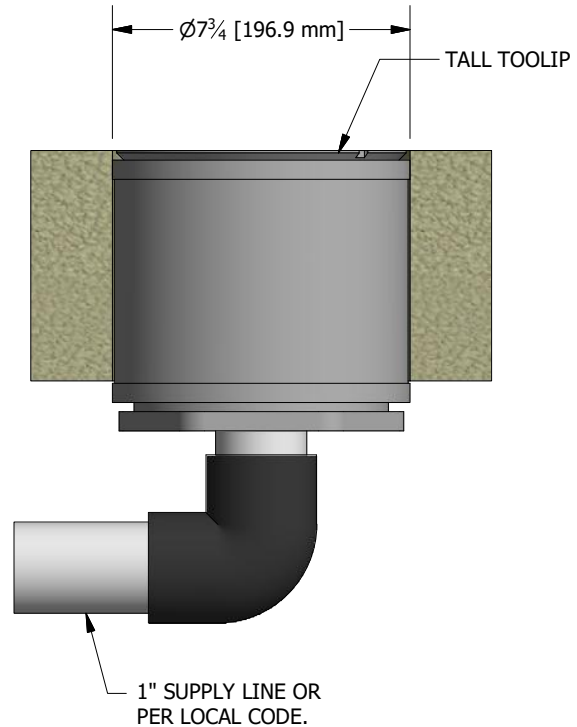
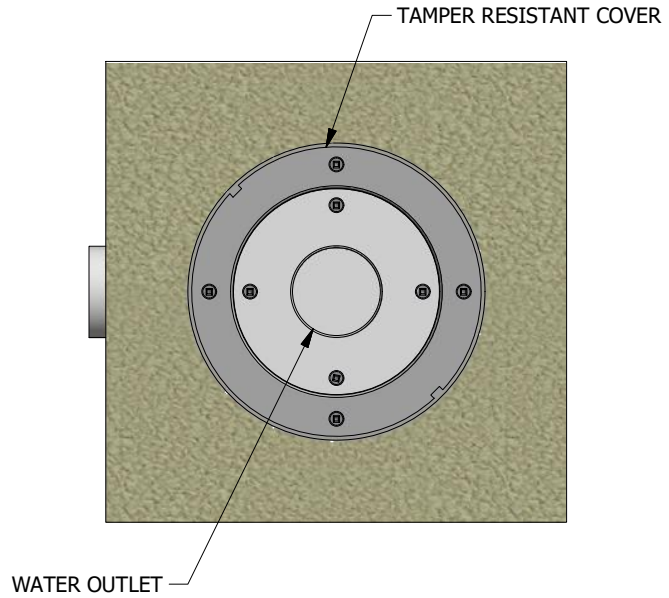
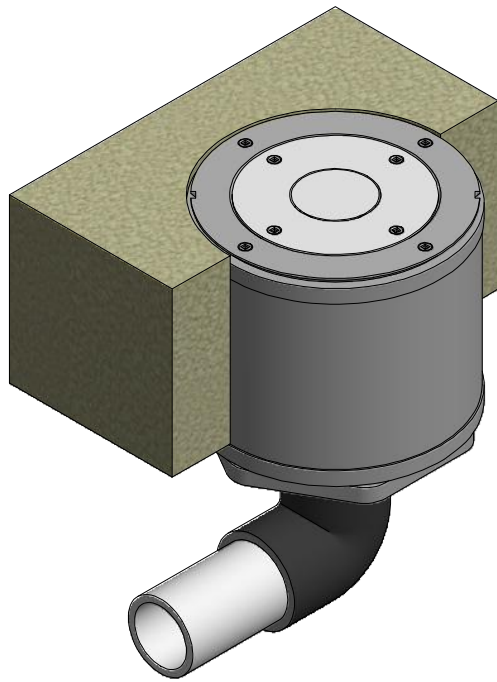
INTENDED FLOW	32 GPM
GPM OPERATION RANGE	23 GPM TO 42 GPM
HEAD	6'
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	No
NUMBER OF PEOPLE TO INSTALL	2
MANHOURS TO INSTALL	2

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NOTE:

- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 14.5 GPM.
- #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
- #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.
- #4 SUPPLY LINE TO BE SOLVENT WELDED TO OMNIPOD FEATURE RECIEVER.
- #5 CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.

AREA OF INFLUENCE:
4' DIAMETER
VARIES WITH FLOW

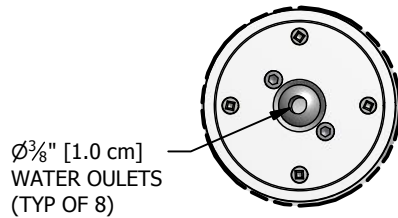
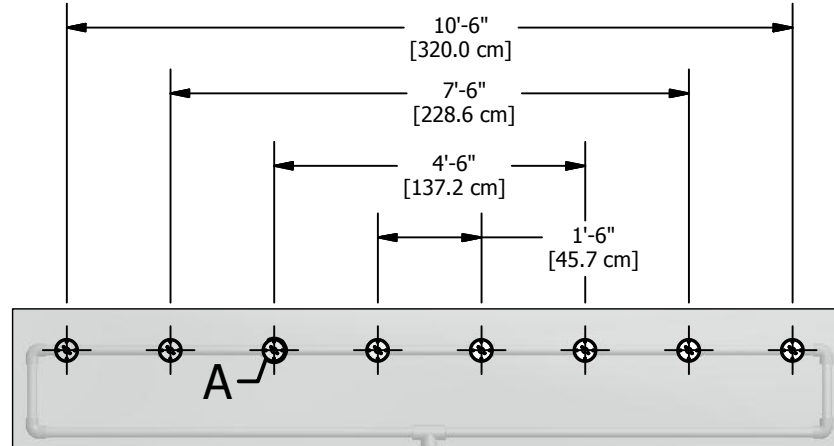
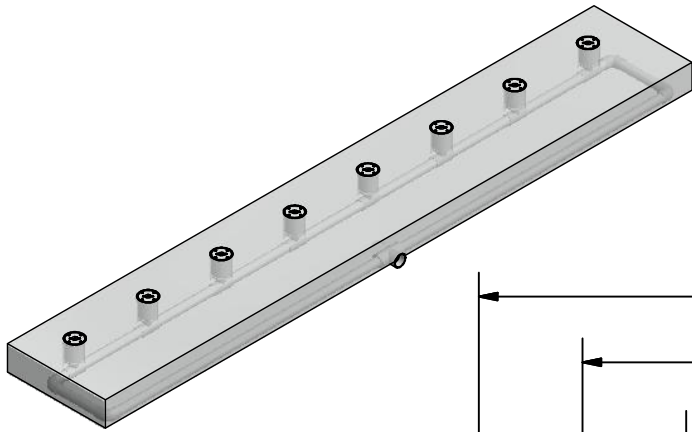


INTENDED FLOW	10.6 GPM
GPM OPERATION RANGE	6.8 GPM TO 14.5 GPM
HEAD	3'
MINIMUM SUPPLY LINE SIZE	1"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	Yes
NUMBER OF PEOPLE TO INSTALL	1
MANHOURS TO INSTALL	0.5

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PRODUCT PART #	REV					
TALP-001-OM	1					

C:\Vault workspace\Designs\Surface Sprays\Tal Toolip\TALP-001-OM\TALP-001-OM-ZCS.idw

AREA OF INFLUENCE:
12' L X 6' W
VARIES WITH FLOW



Ø^{3/8}" [1.0 cm]
WATER OULETS
(TYP OF 8)

DETAIL A

CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.



2" SUPPLY LINE OR PER LOCAL CODE.

NOTE:

- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 41.3 GPM.
- #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
- #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.

INTENDED FLOW	30.3 GPM
GPM OPERATION RANGE	19.3 GPM TO 41.3 GPM
HEAD	3'
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	No
NUMBER OF PEOPLE TO INSTALL	1
MANHOURS TO INSTALL	2

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PRODUCT NAME

TUNNEL ARCH 8 OUTLET

SHEET 1 OF 1

PRODUCT PART #

TNAR-010

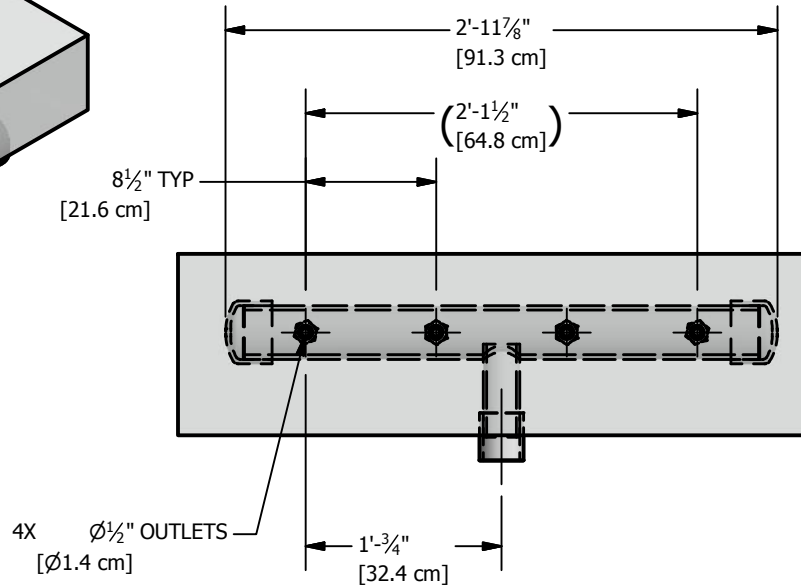
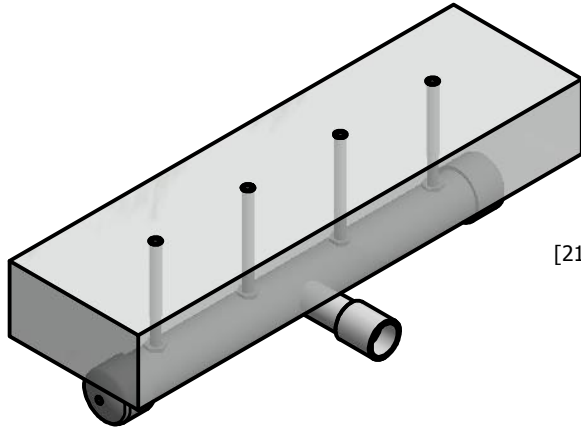
REV

1

NOTE:

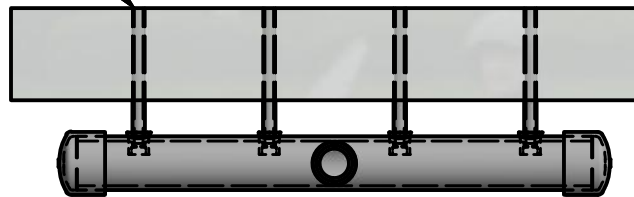
- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 36.7 GPM.
- #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
- #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.
- #4 SUPPLY LINE TO BE SOLVENT WELDED TO FEATURE RECIEVER.
- #5 CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.

AREA OF INFLUENCE:
8' L X 7' W
VARIES WITH FLOW



1/2" RISERS TO BE CUT FLUSH WITH CONCRETE

CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.



2" SUPPLY LINE OR PER LOCAL CODE.

ALL MOUNTING POINTS MUST BE WITHIN +/- 1/4" OF THE SAME ELEVATION UNLESS OTHERWISE NOTED.

INTENDED FLOW	27 GPM
GPM OPERATION RANGE	17.1 GPM TO 36.7 GPM
HEAD	7"
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	No
NUMBER OF PEOPLE TO INSTALL	1
MANHOURS TO INSTALL	1

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PRODUCT NAME
POP JETS 4 OUTLET

SHEET 1 OF 1

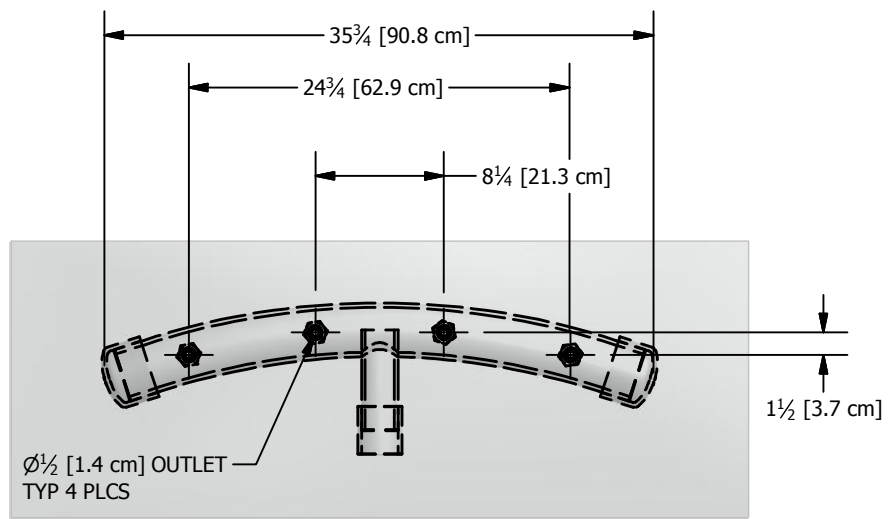
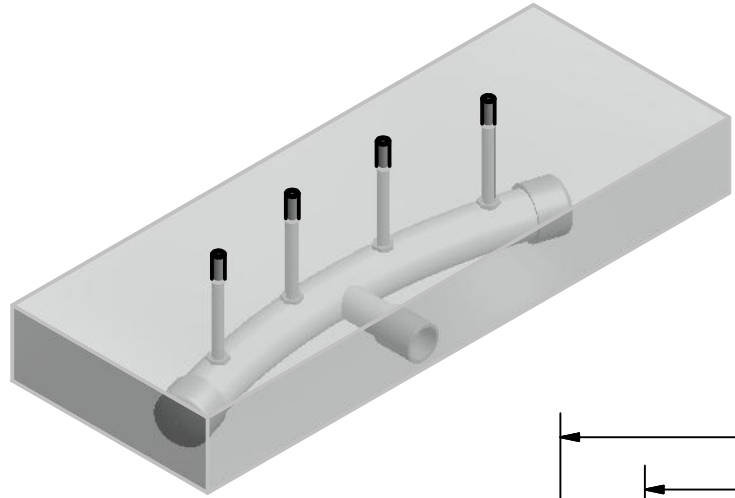
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PPJT-003

REV
1

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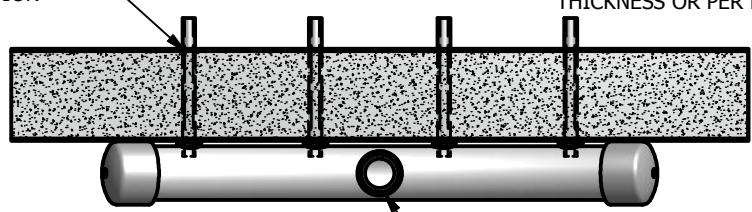
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AREA OF INFLUENCE:
8' L X 7' W
VARIES WITH FLOW



RISERS TO BE CUT FLUSH WITH CONCRETE AFTER INSTALLATION

CONCRETE TO BE 6" MINIMUM THICKNESS OR PER LOCAL CODE.



2" SUPPLY LINE OR PER LOCAL CODE.

- NOTE:
- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 36.7 GPM.
 - #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
 - #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.

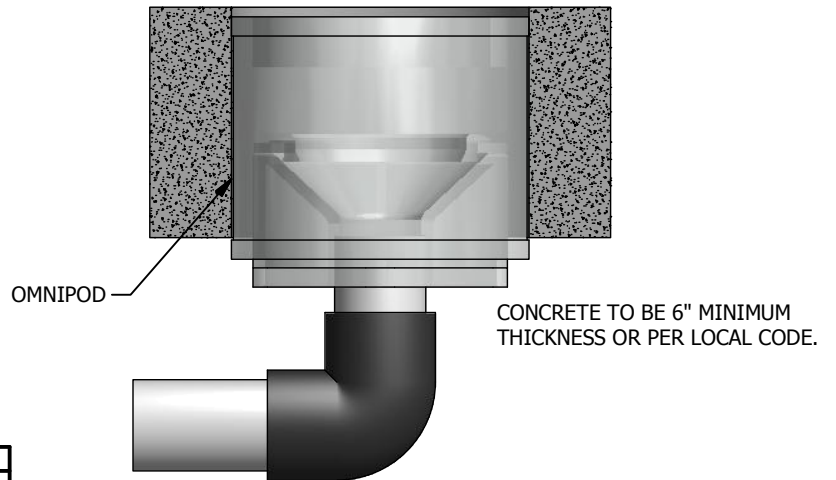
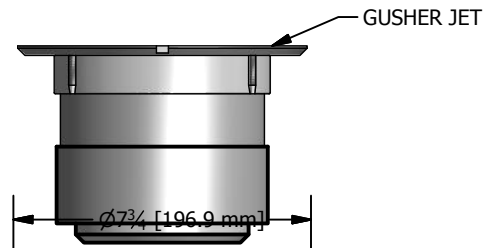
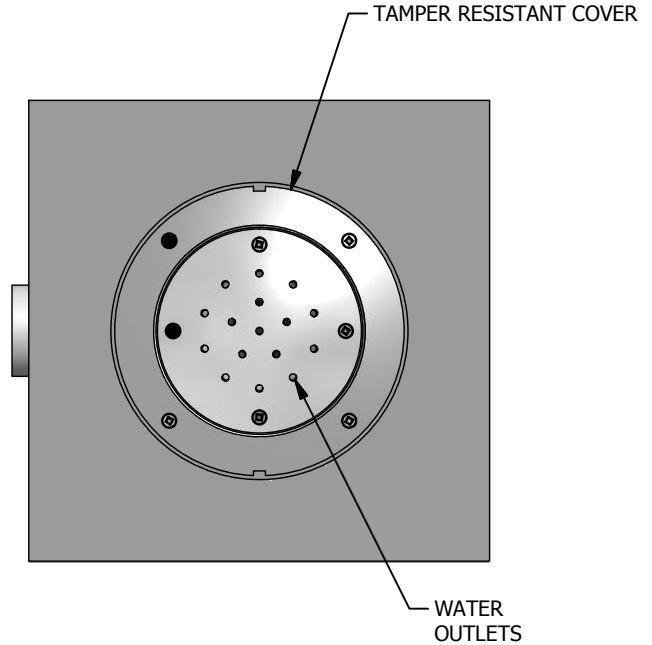
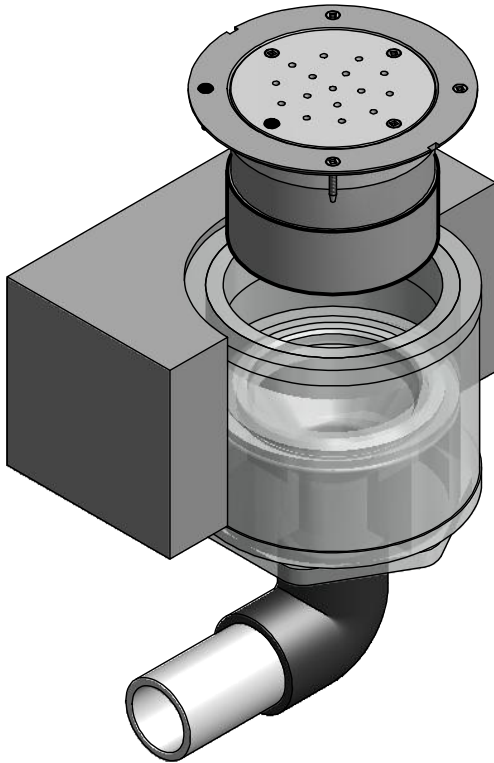
INTENDED FLOW	27 GPM
GPM OPERATION RANGE	17.1 GPM TO 36.7 GPM
HEAD	7"
MINIMUM SUPPLY LINE SIZE	2"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	No
NUMBER OF PEOPLE TO INSTALL	1
MANHOURS TO INSTALL	1

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	<p>PRODUCT NAME</p> <h2 style="margin: 0;">POP JET CURVED</h2>	<p>SHEET 1 OF 1</p> <p>PRODUCT PART #</p> <h3 style="margin: 0;">PPJT-004</h3>
T-419.207.1229 ©2014 Rain Drop Products, LLC. All rights reserved.	F-419.207.8902	C:\Vault workspace\Designs\Surface Sprays\Popjets\PPJT-004\PPJT-004-ZCS.idw

2

1

AREA OF INFLUENCE:
6' DIAMETER
VARIES WITH FLOW



NOTE:
#1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 20.8 GPM.
#2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
#3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.

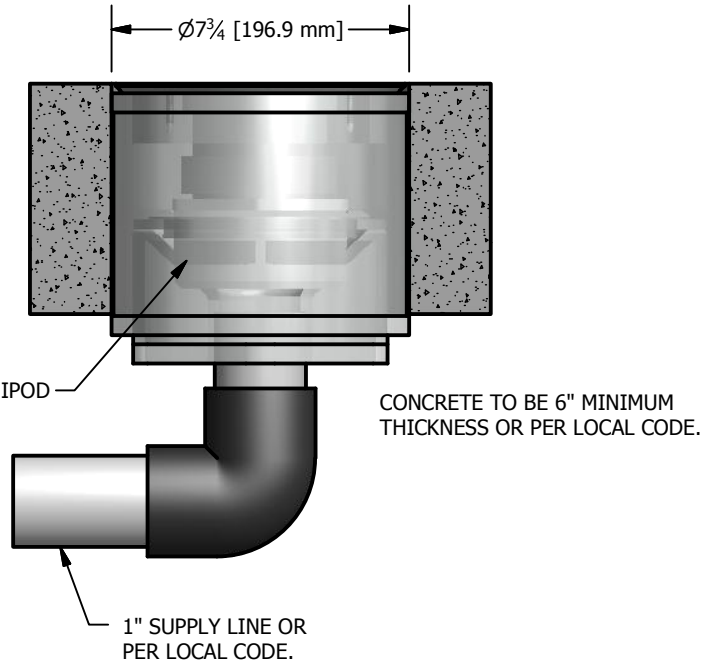
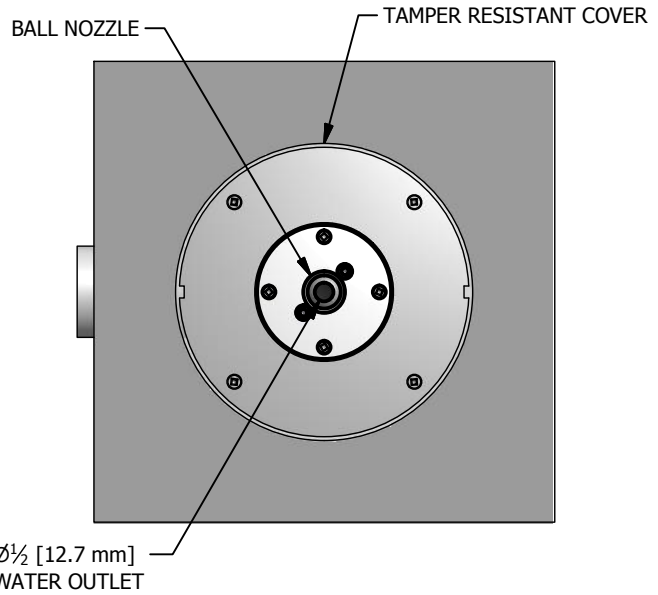
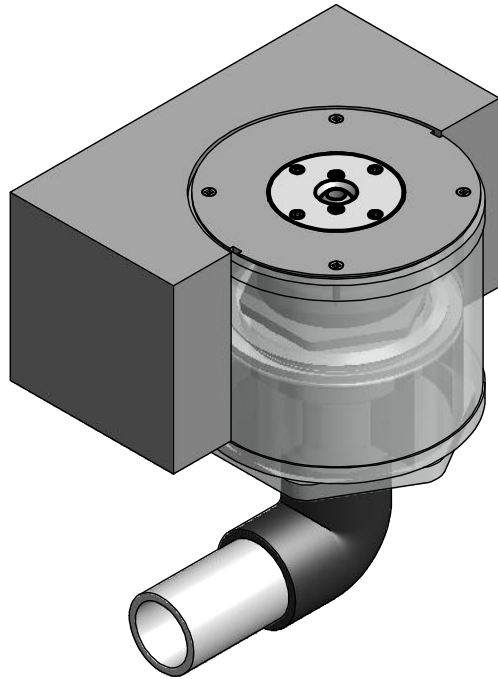
INTENDED FLOW	15.2 GPM
GPM OPERATION RANGE	9.7 GPM TO 20.8 GPM
HEAD	6'
MINIMUM SUPPLY LINE SIZE	1"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	Yes
NUMBER OF PEOPLE TO INSTALL	1
MANHOURS TO INSTALL	0.5

1" SUPPLY LINE OR PER LOCAL CODE.

SUPPLY LINE TO BE SOLVENT WELDED TO OMNIPOD FEATURE RECIEVER.

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	<p>PRODUCT NAME GUSHER JET-OMNIPOD</p>		<p>PRODUCT PART # GSJT-001-OM</p>	<p>REV 1</p>

AREA OF INFLUENCE:
3' DIAMETER
VARIES WITH FLOW



- NOTE:
- #1 DO NOT EXCEED THE MAXIMUM FLOW RATE OF 9.2 GPM.
 - #2 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER CENTERED ON THE WATER SUPPLY.
 - #3 HEAD REQUIRED MEASURED FROM BASE OF FEATURE.

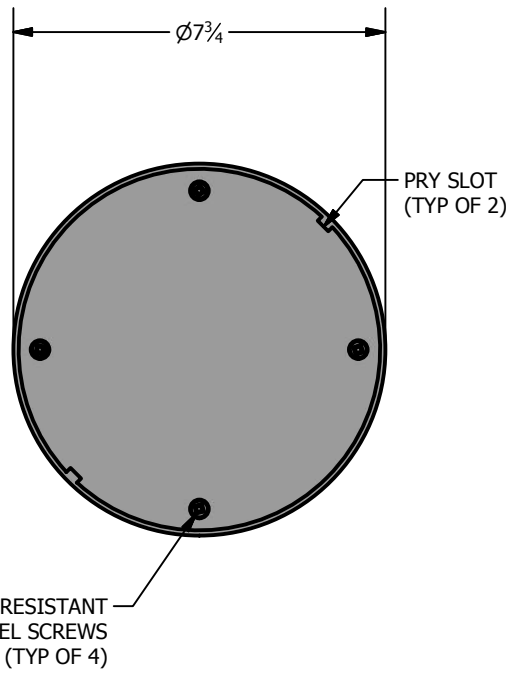
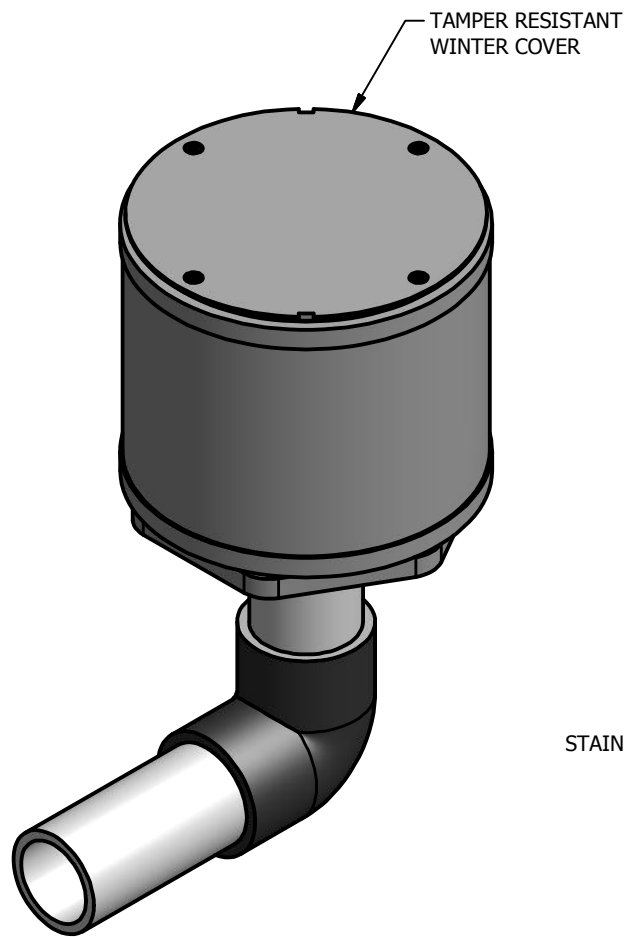
INTENDED FLOW	6.7 GPM
GPM OPERATION RANGE	4.3 GPM TO 9.2 GPM
HEAD	3'
MINIMUM SUPPLY LINE SIZE	1"
RECIRCULATED WATER	Yes
POTABLE WATER	Yes
SALT WATER	Yes
OMNIPOD COMPATIBLE	Yes
NUMBER OF PEOPLE TO INSTALL	1
MANHOURS TO INSTALL	0.5

SUPPLY LINE TO BE SOLVENT WELDED TO OMNIPOD FEATURE RECIEVER.

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	PRODUCT NAME <h2 style="margin: 0;">UPSTREAM JET-OMNIPOD</h2>		PRODUCT PART # UPJT-007-OM	REV 1

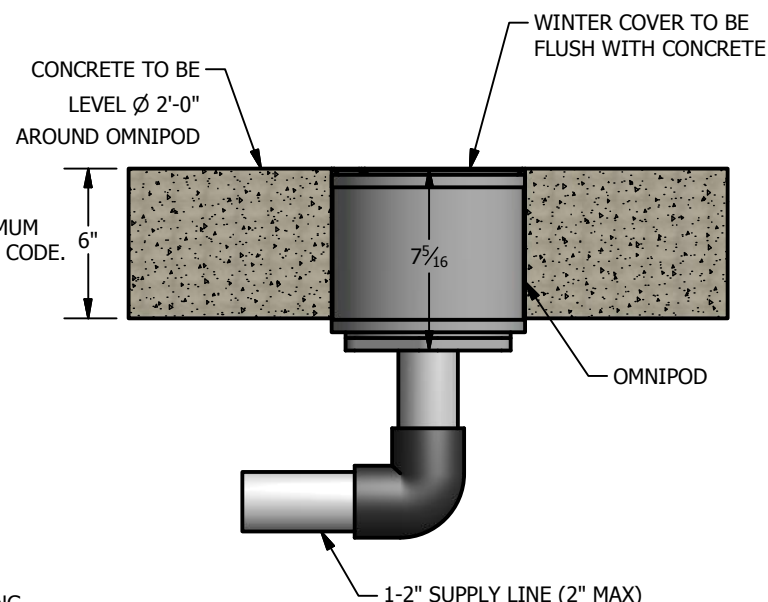
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1



B

B




A

A

NOTES:

1. VALVE MUST BE INSTALLED ON SUPPLY LINE TO REGULATE THE FLOW.
2. CONTRACTOR RESPONSIBLE FOR ALL PVC PIPING INCLUDING BUT NOT LIMITED TO FLANGES, ELBOWS, GASKETS AND HARDWARE TO CONNECT TO FEATURE TO OPERATE PROPERLY.
3. DO NOT TAKE OFF WINTER COVER UNTILL FEATURE IS READY TO BE PLACED.
4. SEE FEATURE CUTSHEET FOR DETAILS.

NUMBER OF PEOPLE TO INSTALL	1
MANHOURS TO INSTALL	1

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	PRODUCT PART #	REV				
POD-A001	1					
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2

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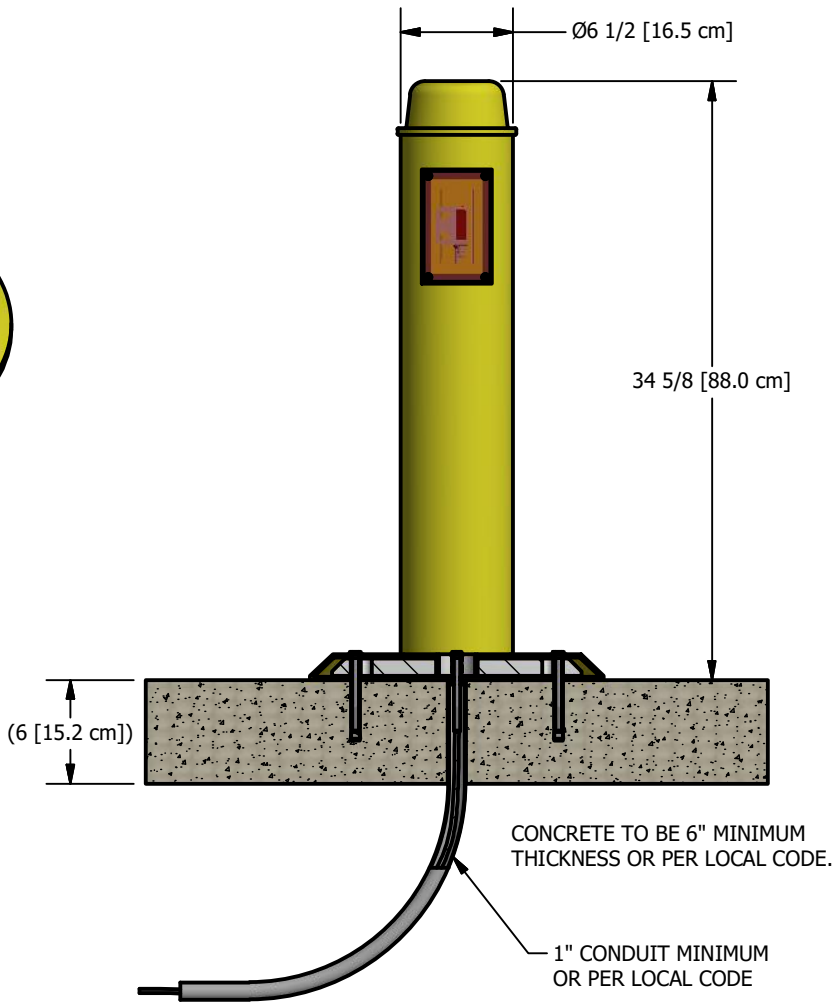
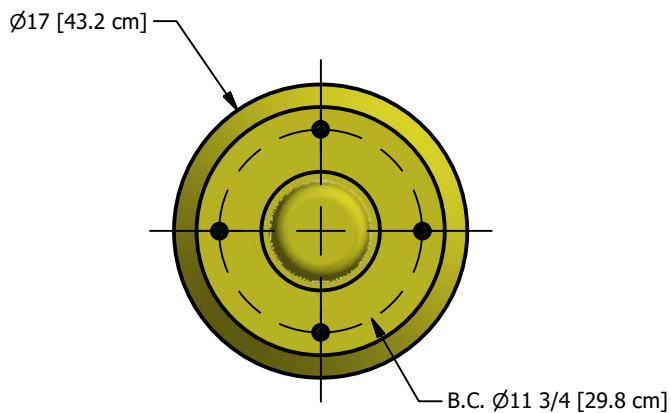
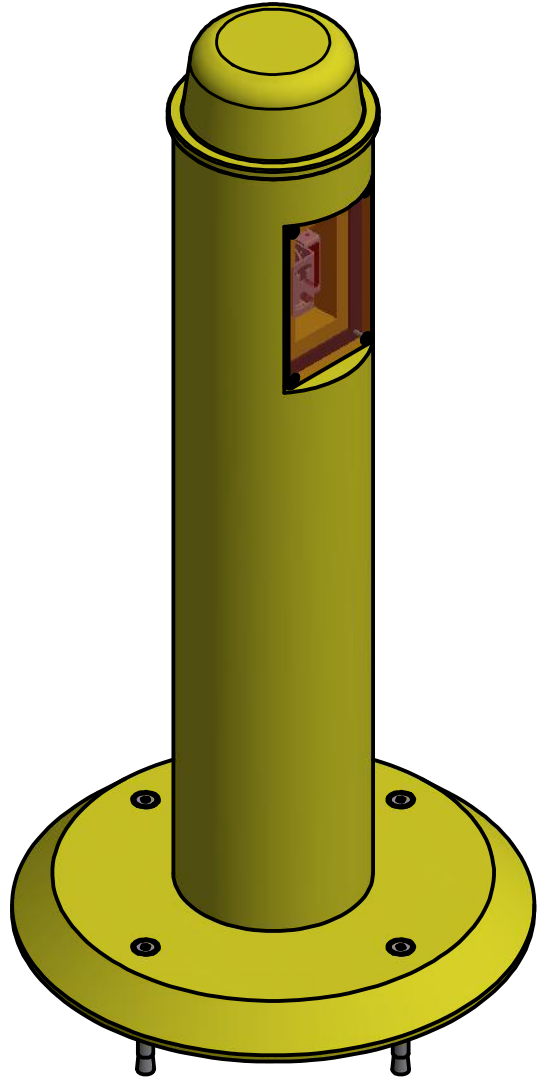
1

B

B

A

A



NOTE:
 #1 CONCRETE MUST BE LEVEL 2'-0" IN DIAMETER
 CENTERED ON THE FEATURE

GPM OPERATION RANGE	0
HEAD	N/A
MINIMUM SUPPLY LINE SIZE	N/A"
RECIRCULATED WATER	No
POTABLE WATER	No
SALT WATER	No
OMNIPOD COMPATIBLE	No
NUMBER OF PEOPLE TO INSTALL	1
MANHOURS TO INSTALL	1

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PRODUCT NAME
BOLLARD, PHOTO SENSOR

SHEET 1 OF 1

PRODUCT PART #	REV
BOL-004	1

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Specification Rain Maker Controller

1.0 General

1.1 The control system shall be comprised of a 5.7" color touch screen, I/O Modbus interface and/or Ethernet. The controllers' primary function is to control the operation of pumps, system water pressure, solenoids, sound, lighting features, and automated functions. Shall also provide alarm inputs when used with chemical controllers, ultra violet, systems, filtration systems, and anemometers. The master control shall be capable of providing optional remote access and control ready capability with Ethernet or wireless communication.

1.2 The control system is all IP-67 rated, and is a modular design that locates the I/O at or near the device(s) that are being controlled. All plug and play, no landing wires, all cabling included for devices supplied by Rain Drop Products.

2.0 Design

2.1 **Construction:** The controllers' enclosure shall be a NEMA 4 fiberglass enclosure for indoor and outdoor application. The enclosure shall have hinged door with latches that can be padlocked. Enclosure sizes vary depending on the number and type of outputs. The master control shall have a 5.7" touch screen to program and monitor the slave controls. All electrical ports entering and exiting the enclosure shall be water tight plug connectors, and have a screw cap when not in use.

2.2 **Power Requirements:** 90-264 VAC

2.3 **Interface:** The user interface on the master control shall be a 5.7" color touch screen.

- 2.3.1 Display Area: W 163 x H 127.4 mm [W 6.41 x H 5.09 in]
- 2.3.2 Touch Screen: Resistive Film (analog) 1024 x 1024 resolution
- 2.3.3 Backlight: White LED
- 2.3.4 Storage Temperature: -20 to 60 °C (-4 to 140 °F)
- 2.3.5 Environmental Ratings: IP65f, NEMA Type 4x/13
- 2.3.6 Certifications: CE, CUL/UL Listed C1D2, RoHS, GOST, KC, DNV



3.0 Input and Output: Control shall communicate with devices utilizing a Modbus and/or Ethernet. The system is expandable operating up to 512 outputs and inputs per node, and shall operate on 24VDC. The control shall have minimum:

3.1 Temperature / Environment

3.1.1 Operating temperature: -25 °C ... +60 °C

3.1.2 Storage temperature: -40 °C ... +85 °C

3.2 Degree of protection: IP67 (NEMA 6&6P)

3.3 Shock resistance: acc. to IECgem. IEC 60068-2-27

3.4 Vibration resistance: acc. to IECgem. IEC 60068-2-6

3.5 Connector type: All M12 and M8

3.6 Output sold with controlled device or can be purchased separately. Output are sold in blocks of (8) and are color coded to the Rain Drop Products supplied control device cables.

3.7 Cabling included with the controller and the controlled devices that are supplied by Rain Drop Products with either M8 or M12 connectors color coded and labeled to the device.

3.8 Alarm inputs with Rain Drop supplied devices:

3.8.1 Chemical Control – Shuts system down if ORP is outside of set point range

3.8.2 UV Reactor – Shuts system down if the UV system is not operating.

3.8.3 Anemometer – Adjust water flow to features to limit blow off or shuts system down in super high winds

3.8.4 Lightning detection – Shuts system down during lightning storms

3.8.5 Pump & VFD

3.8.5.1 Filtration – Shuts system down if filtration pump is not operating

3.8.5.2 Feature Pump – Shuts system down if the feature pump is not functioning.

4.0 Enclosure Cooling

4.1 Enclosure is cooled by built in air conditioning

4.2 Cools up to 22° C (72 °F) below ambient air temperature

5.0 Packaging

5.1 Units shall be packaged to protect against damage during transit.

6.0 Installation:

6.1 Drawings and instructions shall be supplied by manufacturer for ease of installation.

6.2 All devices to have M8 or M12 connections labeled and color coded for simple plug and play installation.

7.0 Warranty

7.1 Limited Warranty – See Rain Drop Products warranty declaration in addition to statement herein:

7.1.1 Warranty shall be furnished by manufacturer against defects in workmanship and materials for a period of one (1) year from date of commissioning by Rain Drop Products factory representative and all controlled devices are supplied by Rain Drop Products;

7.1.2 Warranty shall be limited to 90 days if the control is controlling devices supplied by others, and or not commissioned by a Rain Drop Factory representative.

7.2 The following conditions are Warranty Exclusion:

7.2.1 Improper installation

7.2.2 Normal wear and tear

7.2.3 Abuse, unreasonable use, mistreatment, or neglect

7.2.4 Damage caused by other equipment ,systems , or supply power, lightning, with which the device is used

7.2.5 Device Serial Number has been removed or defaced

7.2.6 Components inside enclosure(s) that show signs of corrosion due to exposure of oxidizers.

7.2.7 Devices that are determined to be stolen

7.2.8 Devices that are not started and commissioned by factory Rain Drop Products representative.

Specification



1.0 GENERAL

1.1 The Flow Control Manifold System shall be responsible for controlling, and distributing the water to the water features on the SprayGround or in the pool.

2.0 DESIGN

2.1 Construction: The Flow Control Manifold System shall be constructed of high strength Schedule 80 PVC. The manifold system shall incorporate distribution nipples constructed of Schedule 80 PVC gas welded to the main manifold body. No connection tees are allowed. No solvent (glue) welding is permissible.

2.2 Sizes: shall be available in four inch, six inch and eight inch depending on the amount of water flow as indicated on the Sprayground layout.

3.0 CONTROLS

3.1 Ball Valves: Each outlet shall contain a PVC ball valve on outlets 2" and smaller (butterfly valves shall be supplied by contractor for larger sizes) to adjust the flow of water from the main manifold body.

3.2 Solenoid Valves: Each outlet as required shall incorporate an electrically operated valve for controlling the flow of water. The solenoid valve will either turn the water flow completely on or off. The valves shall be normally closed design and activated by a signal from the CPU.

3.3 Proportional Valves: Each outlet as required shall incorporate an electrically operated valve for controlling the flow of water. The proportional valve can control the flow of the water to varying degrees of flow. The valves shall be normally closed design and activated by a signal from the CPU.

3.4 Outlets: The outlets shall be designed so that the valves can be removed from the main body of the manifold by disconnecting a union. They shall not be permanently attached. A Van Stone Flange w/ swivel shall be attached to the inlet of the Manifold to allow for ease of attachment to the feature supply pump. The maximum number of outlets on a manifold is 20.

3.5 Testing: The entire manifold assembly shall be pressure tested to 22-35 PSI for 30 minutes with zero leakage.

4.0 PACKAGING

4.1 Shall be packaged to protect against damage during transit.

5.0 INSTALLATION

5.1 Drawings and instructions shall be supplied by manufacturer for ease of installation.

6.0 WINTERIZATION

6.1: Manufacturer to supply winterization instructions.



BY Series Butterfly Valves

1-1/2" TO 12" PVC, CPVC AND GFPP

KEY FEATURES

- PVC, CPVC and GFPP Bodies and Discs
- FPM, EPDM and Nitrile Seat Materials
- Fully Supported Flange Bolt Holes
- V-Notch Seal of Liner to Body
- Seven-Position Lever Handle or Gear Box Operator*
- 316 Grade Stainless Steel Shaft
- Meets ANSI B16.10 Face-to-Face Dimensions**

OPTIONS

- Stem Extensions
- Gear Operators
- Pneumatic or Electric Actuators
- Stainless Steel Lugs
- 2" Square Operating Nut
- Titanium or Hastelloy® Shaft
- Chain Operator for Gear Box

MATERIALS

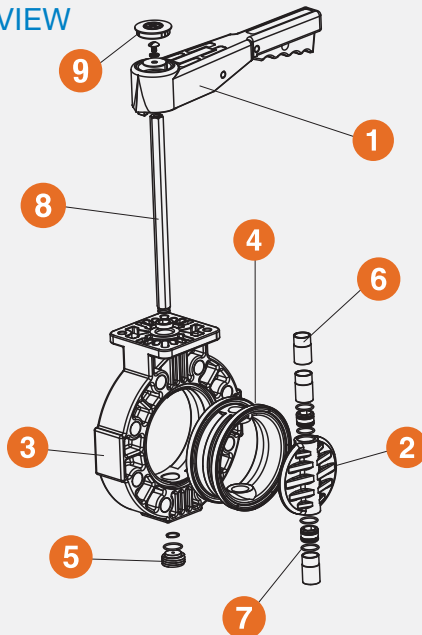
- PVC Cell Class 12454 per ASTM D1784
- CPVC Cell Class 23447 per ASTM D1784
- GFPP Cell Class 85580 per ASTM D4101
- FPM, EPDM or Nitrile Liners

* Typical operation: Lever up to 6"; Lever or gear at 8"; Gear only 10" and up

** Except 10"

TECHNICAL INFORMATION

EXPLODED VIEW



SELECTION CHART

SIZE	BODY MATERIAL	DISC MATERIAL	LINER MATERIAL	PRESSURE RATING
1-1/2" – 8" (DN40 – DN200)	PVC, CPVC or GFPP	PVC, CPVC or GFPP	FPM, EPDM or Nitrile	150 PSI @ 70°F Non-Shock
10" – 12" (DN250 – DN300)	GFPP	PVC or GFPP		

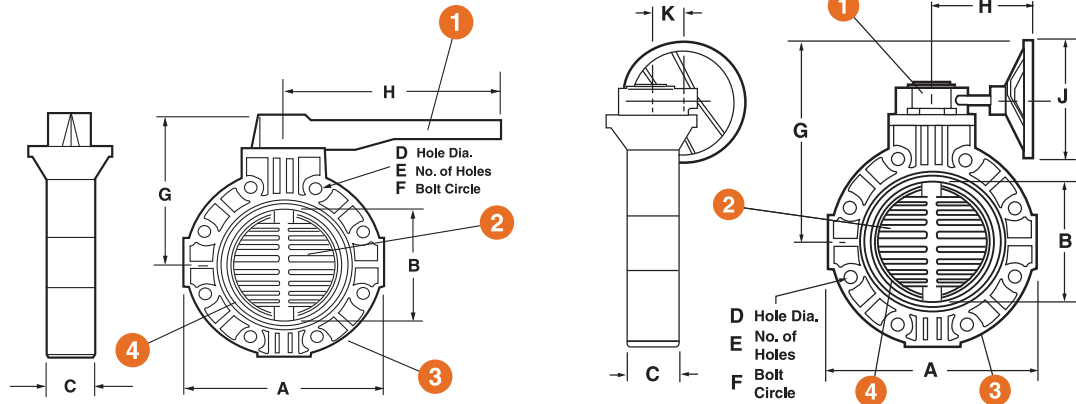
BY Series Butterfly Valves

1-1/2" TO 12" PVC, CPVC AND GFPP

TECHNICAL INFORMATION, CONTINUED

PARTS LIST

1. Operator (Lever or Gear Box)
2. Disc
3. Body
4. Liner
5. Bottom Plug
6. Bearings
7. Seal Retainer
8. Shaft
9. Bezel, Screw and O-Ring



DIMENSIONS – INCHES / MILLIMETERS

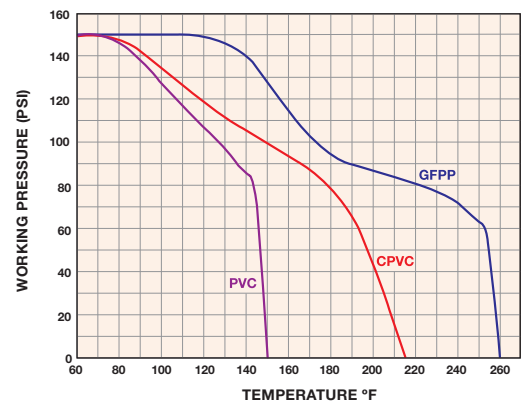
SIZE in / DN	A		B		C		GEAR BOX		LEVER		GEAR BOX		LEVER		WEIGHT lbs / kg
	in / mm	in / mm	in / mm	in / mm	in / mm	in / mm	in / mm	in / mm	in / mm	in / mm	in / mm	in / mm	in / mm		
1-1/2 / 40	6.00 / 152	1.75 / 44	1.66 / 38	.63 / 16	4 / 102	3.88 / 99	9.31 / 236	6.25 / 159	7.13 / 181	10.50 / 267	8.00 / 203	1.88 / 48	10.50 / 4.76		
2 / 50	6.00 / 152	1.75 / 44	1.66 / 38	.75 / 19	4 / 102	4.75 / 121	9.31 / 236	6.25 / 159	7.13 / 181	10.50 / 267	8.00 / 203	1.88 / 48	10.50 / 4.76		
3 / 80	7.75 / 197	3.13 / 80	1.88 / 48	.75 / 19	4 / 102	6.00 / 152	9.75 / 248	6.69 / 170	7.13 / 181	10.50 / 267	8.00 / 203	1.88 / 48	11.60 / 5.26		
4 / 100	9.25 / 235	3.94 / 100	2.06 / 52	.75 / 19	8 / 203	7.50 / 191	10.19 / 259	7.94 / 202	7.13 / 181	12.00 / 305	8.00 / 203	1.88 / 48	14.30 / 6.49		
6 / 150	11.25 / 286	5.81 / 148	2.19 / 56	.88 / 22	8 / 203	9.50 / 241	12.38 / 314	9.50 / 241	7.13 / 181	14.00 / 356	8.00 / 203	1.88 / 48	15.40 / 6.99		
8 / 200	13.75 / 349	7.75 / 197	2.38 / 60	.88 / 22	8 / 203	11.75 / 298	13.50 / 343	10.63 / 270	7.13 / 181	16.00 / 406	8.00 / 203	1.88 / 48	23.50 / 10.66		
10 / 250	16.00 / 406	9.76 / 248	3.00 / 76	1.00 / 25	12 / 305	14.25 / 362	16.00 / 406	N/A	8.09 / 205	N/A	8.00 / 203	2.36 / 60	39.00 / 17.69		
12 / 300	19.00 / 483	11.50 / 292	3.18 / 81	1.00 / 25	12 / 305	17.00 / 432	17.50 / 445	N/A	8.09 / 205	N/A	8.00 / 203	2.36 / 60	51.00 / 23.13		

Dimensions are subject to change without notice – consult factory for installation information

Cv VALUES

DISC ANGLE	15°	30°	45°	60°	75°	FULL OPEN	PRESSURE LOSS CALCULATION FORMULA $\Delta P = \left[\frac{Q}{Cv} \right]^2$ ΔP = Pressure Drop Q = Flow in GPM Cv = Flow Coefficient
SIZE in / DN	Cv VALUES						
1-1/2 / 40	1	8	15	25	58	90	
2 / 50	2	11	21	35	81	125	
3 / 80	11	28	55	90	170	280	
4 / 100	16	55	75	145	340	600	
6 / 150	35	110	255	545	940	1300	
8 / 200	160	220	580	1035	1820	2500	
10 / 250	200	450	1000	1800	3100	4700	
12 / 300	250	750	1300	2800	4500	7100	

OPERATING TEMPERATURE / PRESSURE



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Visit us at: www.haywardflowcontrol.com • Email: hflow@haywardnet.com

4

3

2

1

PARTS LIST

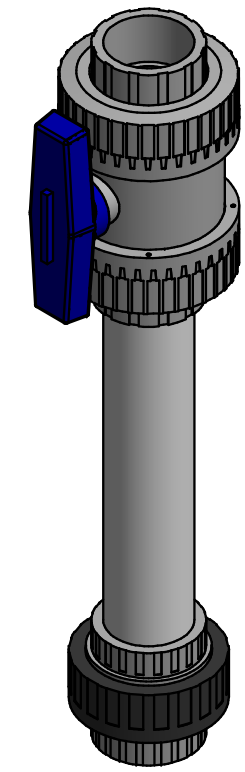
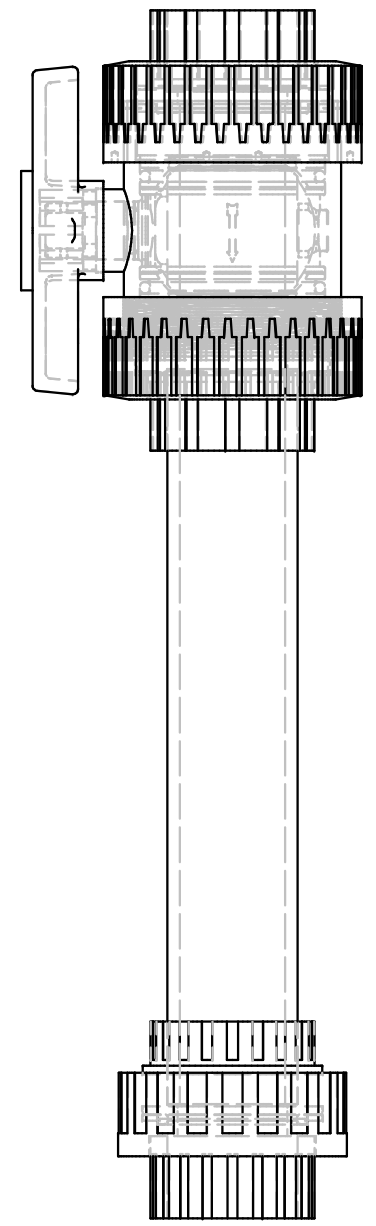
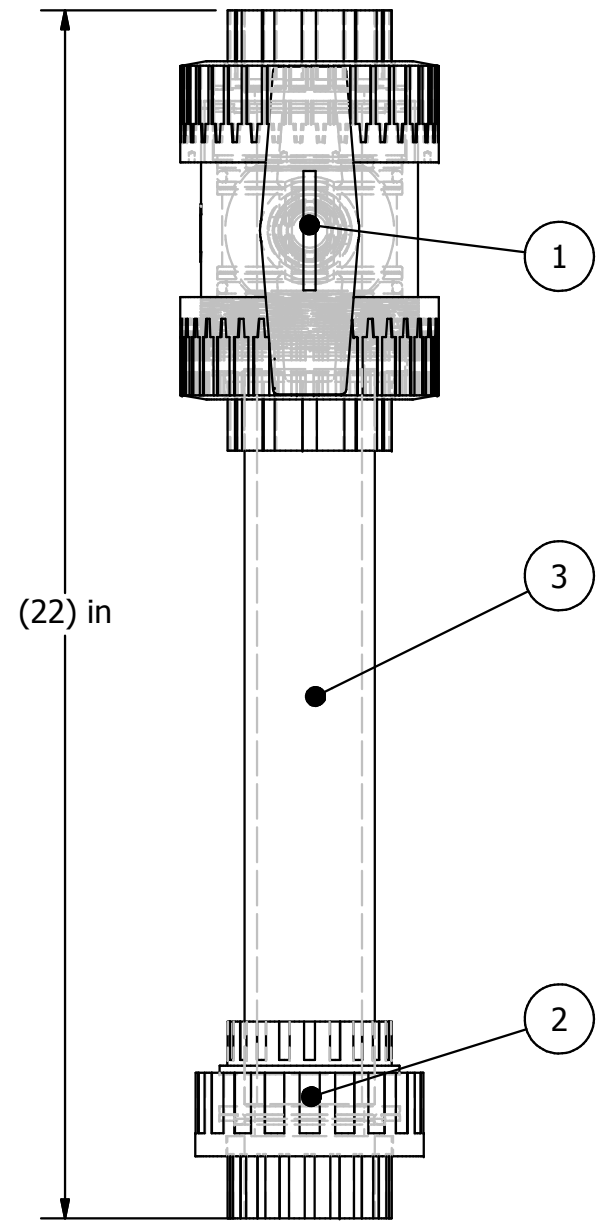
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	ZPP-BLV2-UNN-01	BALL VALVE-2"-TRUE UNION-PLASTOMATIC
2	1	ZPP-UNN2-801	TRUE UNION, 2" SCH 80 PVC
3	1	ZRM-PIP2-801-13.375	PIPE, 2" SCH 80 PVC X 13-3/8"

B

A

B

A

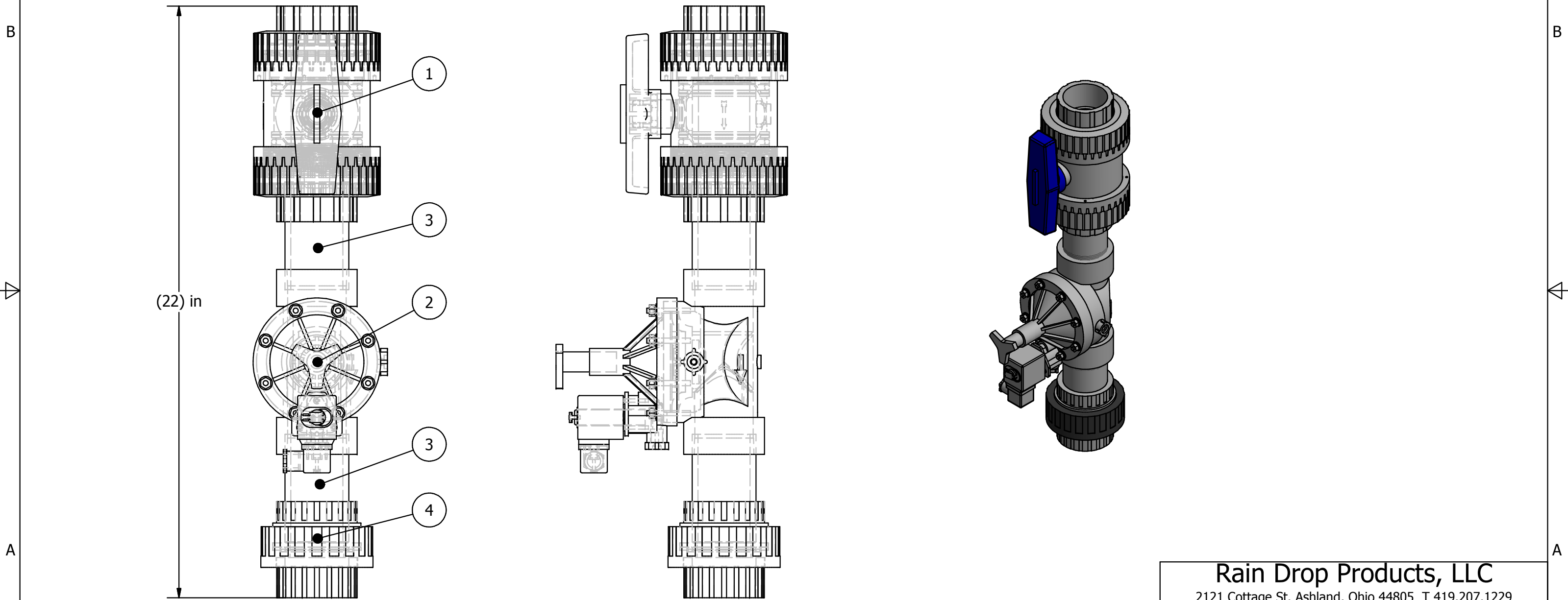


WEIGHT: N/A

WORKING TOLERANCES UNLESS OTHERWISE SPECIFIED	PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF RAIN DROP PRODUCTS LLC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF RAIN DROP PRODUCTS LLC IS PROHIBITED.
DEC. .XX ± .03 - DEC. .XXX ± .005 FRACTION ± 1/16	

Rain Drop Products, LLC 2121 Cottage St. Ashland, Ohio 44805 T 419.207.1229 web www.rain-drop.com			
TITLE			
BALL VALVE ASSEMBLY, TRUE UNION BALL VALVE, 2"			
SIZE	DWG NO	REV	
B	ZAM-BLV-MFD-UNN-2	1	
DRAWN	DATE	SHEET	
jslone	7/1/2016	1 OF 1	

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	ZPP-BLV2-UNN-01	BALL VALVE-2"-TRUE UNION-PLASTOMATIC
2	1	ZPP-SOL2-24VDC-001	SOLENOID VALVE, 2" NPT, 24VDC, NORMALY CLOSED, NONLATCHING
3	2	ZPP-NIP2-801-04	NIPPLE 2" PVC THRD ONE END
4	1	ZPP-UNN2-801	TRUE UNION, 2" SCH 80 PVC



WEIGHT: N/A

WORKING TOLERANCES UNLESS OTHERWISE SPECIFIED	<small>PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF RAIN DROP PRODUCTS LLC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF RAIN DROP PRODUCTS LLC IS PROHIBITED.</small>		
DEC. .XX ± .03 - DEC. .XXX ± .005 FRACTION ± 1/16	SIZE B	DWG NO ZAM-SOL-MFD-RMK-UNN-2-DC	REV 1
	DRAWN jslone	7/1/2016	SHEET 1 OF 1

Rain Drop Products, LLC
 2121 Cottage St. Ashland, Ohio 44805 T 419.207.1229
 web www.rain-drop.com

TITLE
**SOLENOID VALVE ASSEMBLY, TRUE
 UNION BALL VALVE, 2" DC**



HAYWARD®

CAT 2000

AUTOMATED CONTROLLER



OWNER'S MANUAL

INSTALLATION
OPERATION
MAINTENANCE
SPECIFICATIONS

FOREWORD

Congratulations on your wise investment. The product you have selected from the CAT 2000 line of automated controllers should provide you with substantially reduced chemical maintenance, improved compliance with Health Department operating standards, chemical cost savings, and many years of reliable operation. All CAT controllers incorporate state of the art microprocessor-based design technology to provide sophisticated control functions at an affordable price.

Although CAT controllers are relatively simple to install, please take the time to read this entire manual, compare package contents with the parts list, and gather all tools required before beginning installation. Improper installation may void the warranty and create unnecessary hazards. Properly preparing for installation will also reduce facility down-time.

For the purposes of this manual, it is presupposed that the installer is familiar with the physical characteristics of the pool or spa to be automated. As is the case when installing any filtration system component, all recirculating pumps, heaters, etc. need to be turned off prior to installation of the controller. If the filtration system is located below water level, additionally adjust all valves required to eliminate pressure from the system.

Physically, installation of a CAT controller is no more challenging than installation of a chemical feeder. Any swimming pool contractor or maintenance engineer should have the tools and knowledge to perform the installation. Our technical support line can also be used to answer any questions pertaining to controller installation.

Remember that your new CAT controller is not a substitute for performing and recording manual water testing in conformance with your state or local health department regulations. Never operate a water chemistry controller without a flow sensor, power interlock, or other means of ensuring that chemicals will not be fed without proper filtration system recirculation.

Congratulations on your purchase and welcome to the world of chemical automation. Please complete and return your warranty registration card today.

TABLE OF CONTENTS

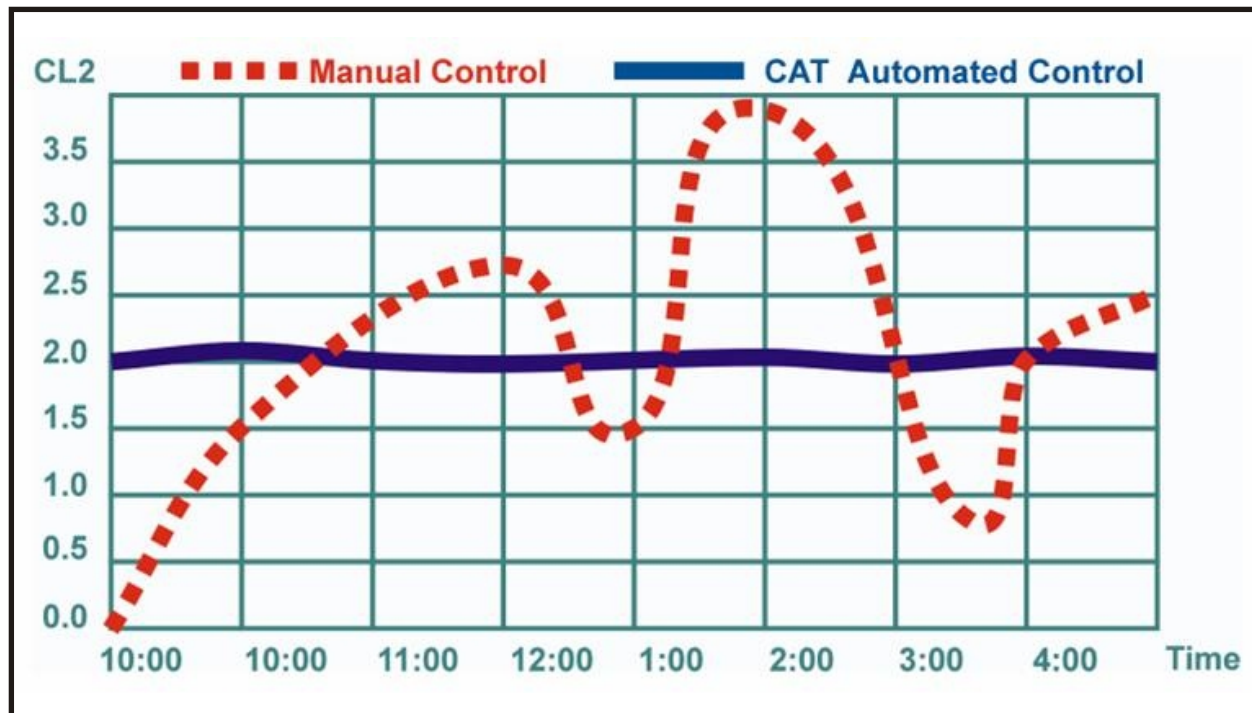
Chemical Automation with the CAT 2000	Section 1.
Components of a CAT System	Section 2.
Important Safety Information.	Section 3.
Packaging Contents	Section 4.
Standard Installation	Section 5.
Installation Utilizing Bypass Line	Section 6.
Preparing Pool or Spa Water Chemistry	Section 7.
Setting and Operating the CAT 2000	Section 8.
Advanced (Dealer) Setup Mode	Section 9.
Display Functions	Section 10.
Maintenance	Section 11.
Troubleshooting	Section 12.
Specifications	Section 13.
Warranty	Section 14.

SECTION 1. CHEMICAL AUTOMATION WITH THE CAT 2000

A pool operator typically checks and adjusts pool or spa water chemistry hourly at best. The CAT 2000 continuously monitors pH and sanitizer activity, constantly adjusting the feeding of chemicals on a basis proportional to the demand. The results include elimination of "human error", accurate and reliable maintenance of chemical levels twenty-four hours a day, compliance with Health Department chemistry standards, reduced burden on operating staff, and a reduction of chemical usage and costs.

The following graph (Illustration 1.) compares typical chlorine levels when chemistry is adjusted manually versus automatically with the CAT 2000 controller.

ILLUSTRATION 1.
MANUAL -VS- CAT AUTOMATED CONTROL



SECTION 2.

COMPONENTS OF A CAT 2000 AUTOMATED SYSTEM

The following is a description of the components incorporated in a typical CAT 2000 controller system:

The Professional-Series pH Sensor samples water from the filtration system and sends signals to the controller indicating the acidity of the water. The ideal pH range for pools and spas is 7.4 - 7.6. The CAT 2000 controller is preset from the factory to maintain pH 7.5. If pH is maintained below 7.4 (too acidic), eye irritation, corrosion of equipment, and damage to the pool or spa surface can occur. If pH is maintained above 7.6 (too alkaline), sanitizer activity is reduced, water may become cloudy, and eye irritation may result.

The Professional-Series ORP Sensor samples water from the filtration system and sends signals to the controller indicating the oxidation-reduction potential (redox) of the water. ORP is an actual measure of sanitizer activity (chlorine, bromine, ozone, etc.) and bacteriological water quality rather than an expression of chemical residual levels. The CAT 2000 controller is preset from the factory to maintain ORP at 650 millivolts.

The Flow Sensor (required) monitors the rate of flow across the pH and ORP sensors and signals the controller to disable automated chemical feeding during periods when the filtration system is off or low recirculation flow is detected.

The Flow Cell provides a convenient location for mounting the pH, ORP and Flow Sensor while ensuring ideal hydraulic conditions to maximize sensor performance and life.

The CAT 2000 controller unit scans and interprets the signals from the pH and ORP probes, displays water quality readings in digital format, and activates chemical feeders in proportion to the demand required to maintain setpoint pH and ORP levels. The unit incorporates audible and visual safeguard alarms for out of range conditions, calibration adjustment for pH, and mode selections to manually feed or disable feeding for either channel. The CAT 2000 controller unit also features an internal micro-computer for unsurpassed accuracy, adaptability, and ease of use. All user-entries and adjustments are made through the touch-screen interface front panel.

SECTION 3.

IMPORTANT SAFETY INFORMATION

IMPORTANT SAFETY INFORMATION

1. **WARNING** - Important safety information is contained throughout this manual. Read complete instructions prior to installation.
2. **WARNING** - Risk of Electric Shock. Connect controller only to a grounding type receptacle protected by a ground-fault circuit interrupter (GFI). CAT Controllers recommends installation to a dedicated GFI circuit breaker performed by a licensed electrician.
3. **WARNING** - Disconnect power before servicing. Other than the fuses, there are no user serviceable parts inside the controller.
4. **WARNING** - All power cords should be inspected frequently. Any damaged power cords must be replaced immediately to reduce the risk of electric shock. Never operate a controller without functional flow protection.
5. **WARNING** - Installation requires a properly located GFI protected receptacle. Never use an extension cord for electrical connections to the controller.
6. **WARNING** - Always mount controller in a safe area not subject to damage by moving objects. Never bury controller power cords.
7. **WARNING** - Any person using, adjusting, or monitoring the controller must be at least 18 years of age and be familiar with these instructions and the contents of this manual.
8. **WARNING** - Always take and record manual water chemistry readings in conformance with Health Department requirements. Although automated controllers are a great aid in maintaining healthy water quality, controllers are not a substitute for manual water testing with an accurate test-kit.
9. **WARNING** - Always read and become familiar with Material Safety Data Sheets (MSDS) and safe handling instructions for all chemicals used with the controller.
10. **Caution:** The automatic controller should not be installed where it is accessible to the public.

SECTION 4.

PACKAGE CONTENTS

Please unpack your new controller system carefully. Do not use a razor or sharp instrument to remove contents. Report any shipping or handling damage immediately to your shipping company. Enclosed in the packaging you should find all of the following:

- (1) CAT 2000 Water Chemistry Controller
- (1) Professional Series pH Sensor with 24" Cable and BNC Connector
- (1) Professional Series ORP Sensor with 24" Cable and BNC Connector
- (2) BNC Connector Protective Covers (Remove to Connect Sensors)
- (2) Sensor Storage Containers
- (1) CAT 2000 Owner's Manual

The CAT 2000 Pro-Pack includes the following additional items:

- (1) PVC Backboard with Mounting Holes and Stainless Hardware
- (1) Machined Acrylic Flow Cell assembled with:
 - (3) 1/4" NPT x 3/8" Tubing Asahi Ball Valves
 - (1) Rotary Flow Sensor with Cable and Specialty Connector
- (1) 30' Roll, Blue Poly Installation Tubing (3/8" OD)
- (2) 1/4" NPT x 3/8" Tubing True-Seal Connectors
- (1) Pro-Pack Quick Start Guide

Before commencing installation, please confirm that items listed above have been included. Please report any shortages immediately to the factory.

SECTION 5.

INSTALLATION WITH FLOWCELL

The following tools are recommended for installation:

- Drill (Cordless preferred)
- 7/16" Drill Bit
- 1/4" NPT (National Pipe Tapered) Tap
- Masonry Drill Bit & Anchors (if required)
- 13/16" Wrench or Channel-Lock Pliers.

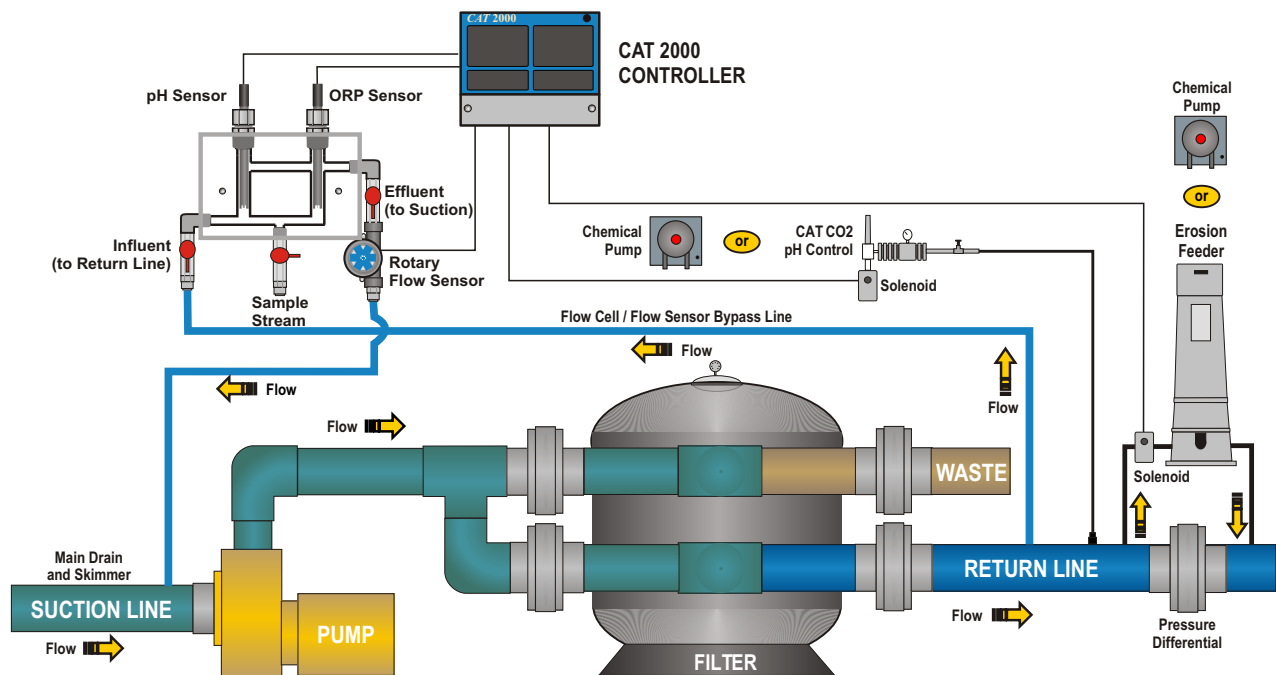
INSTALLATION PROCEDURES

The key to a successful flow cell installation is in the plumbing. A pressure differential is required to allow clean, untreated water to pass through the cell and across the sensors. We recommend using a CAT Flowcell and fittings to create a pressure-suction "loop" line.

1. Turn off heater, chemical feeders, pump, and any other related equipment. Relieve pressure from filtration system.
2. Select a convenient mounting location for the controller unit which will meet the following criteria:
 - A. Facilitates a combined (influent and effluent) maximum tubing run of 30'.
 - B. Located a minimum of ten feet from pool or spa.
 - C. GFI protected power source available.
 - D. Easily accessible to pool or spa operator.
 - E. Away from corrosive materials and physical hazards.
3. Securely mount Controller or PVC Backboard on vertical wall.
4. Drill and tap a 1/4" NPT port at a location just down-stream of the filter, but up-stream from any chemical injection point. Install a tubing connector, and run flex tubing to the influent flow cell port.
5. Drill and tap a 1/4" NPT port at a location subject to vacuum or reduced pressure. Install the remaining tubing connector and run flex tubing to the effluent flow cell port.
6. Cut a 3" to 6" length of flex tubing and insert into the sample stream port.
7. Remove pH and ORP sensors from the plastic storage bottles and save bottles and storage fluid for future use. Thread sensors into flow cell.

8. Remove BNC protective covers from left side of controller unit and store for future use. These covers protect the controller unit from electro-static discharge (ESD) and should be used whenever handling or transporting the controller unit.
9. Connect the pH, ORP and Flow sensor cables to the controller unit as labeled. Sensor cables are constructed from a specialized material - never cut or splice.
10. If new or additional chemical feeders are to be used with the controller, install according to manufacturers instructions at this time.
11. Connect chemical feeders to the controller as labeled.
12. Check all electrical and mechanical connections. Resume filtration system operation and check for any leaks.

ILLUSTRATION 2. CAT 2000 INSTALLATION DIAGRAM WITH FLOWCELL



ALL CHEMICALS MUST BE INJECTED DOWN STREAM FROM HEATER & FLOW CELL

SECTION 6.

INSTALLATION WITH BYPASS LINE

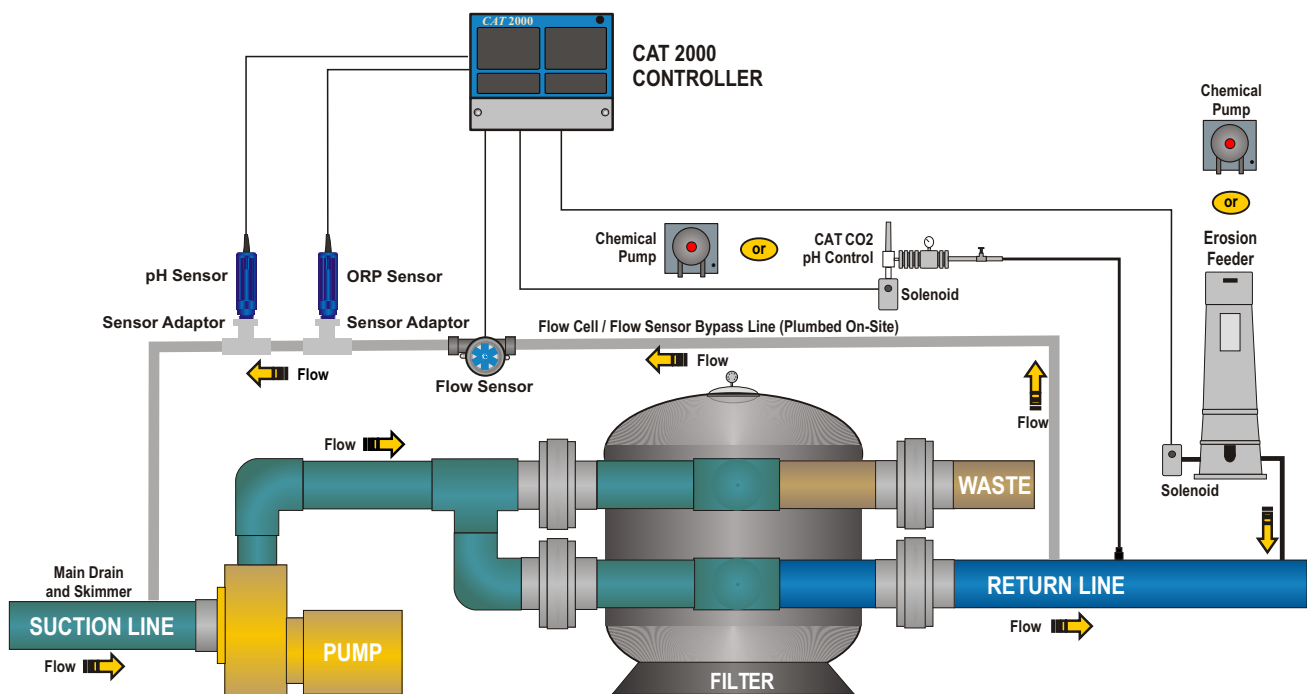
CAT recommends the use of a CAT Flowcell and Rotary Flow Sensor for all recreational water applications. The CAT Flowcell provides a controlled flow to maximize sensor life, convenient sample port for manual water tests, integrated mounting of Rotary Flow Sensor, and fast professional installation with flexible tubing and Tru-seal connectors.

Construction of a bypass line should only be performed by experienced technicians familiar with the procedures for plumbing with PVC as well as the material used in the existing filtration system. Refer to Illustration 3 for a typical bypass diagram.

1. Turn off heater, chemical feeders, pump, and any other related equipment. Relieve pressure from filtration system.
2. Select a convenient mounting location for the controller unit which will meet the following criteria:
 - A. Facilitates unobstructed bypass line plumbing.
 - B. Located a minimum of ten feet from pool or spa.
 - C. GFI protected power source available.
 - D. Easily accessible to pool or spa operator.
 - E. Away from corrosive materials and physical hazards.
3. Securely mount the CAT 2000 controller on a vertical wall.
4. Install one "reducing tee" or "saddle tee" fitting each on the incoming suction line to the pump and the return line upstream from heater as shown in Illustration 3.
5. Install ball valves on bypass inlet and effluent immediately adjacent to tee fittings.
6. Install in-line filter (optional) immediately downstream from bypass inlet valve.
7. Install flow meter (optional) immediately downstream from in-line filter (if applicable) or bypass inlet valve.
8. Install two tee fittings to accommodate ½" NPT Professional Series pH & ORP sensors as shown in Illustration 3.
9. Install Rotary Flow Sensor in bypass line as shown in Illustration 3.

10. Remove pH and ORP sensor storage caps and save for future use.
11. Remove BNC protective covers from left side of controller unit and save for future use. NOTE: These covers protect the controller unit from electro-static discharge (ESD) and should be used whenever handling the controller unit.
12. Insert the pH and ORP sensors into the two ½" tee fittings. Teflon tape may be used to seal threads.
13. Carefully route sensor cables to the controller unit, and connect the sensor cables to the controller unit as labeled. NOTE: Sensor cables are constructed from a specialized coaxial material - never cut or splice sensor cables.
14. Label and support all new piping. If new chemical feeders are to be used with the controller, install according to instructions provided by the manufacturer.
15. Connect chemical feeders to the controller unit as labeled.
16. Resume operation of the filtration system and check for leaks.

ILLUSTRATION 3. CAT 2000 INSTALLATION DIAGRAM WITH BYPASS LINE



SECTION 7.

PREPARING WATER CHEMISTRY

Now that your new controller has been physically installed, water chemistry should be tested and adjusted prior to initiating automated control of the pool or spa. Confirm that your pool or spa water conforms to the following ranges before powering on and setting up the CAT 2000.

TEST	MINIMUM	IDEAL	MAXIMUM
pH	7.2	7.5	7.8
Free Chlorine (PPM)	1	2	3
Bromine (PPM)	2	3	4
Cyanuric Acid (PPM)	0	-	100
ORP (mV)	650	-	-
Total Alkalinity	80	-	120
Calcium Hardness	200	-	400

The above table indicates generally accepted guidelines. Always maintain water chemistry according to standards set by your local or State Health Department.

All CAT water quality controllers maintain sanitizer levels (chlorine, bromine, ozone, etc.) based on ORP. Although ORP is a superior index of water quality compared to part per million sanitizer residual levels, factors such as pH, cyanuric acid concentration and total dissolved solids can affect sanitizer residual readings relative to ORP.

CAT strongly recommends establishing desired pH, sanitizer residual, calcium hardness, total alkalinity, temperature and cyanuric acid levels prior to initiating automated control of the pool or spa. The ORP setpoint will need to be changed periodically as described later in this section if the goal is to provide consistent sanitizer residual levels rather than consistent control of ORP.

SECTION 8. SETTING AND OPERATING THE CAT 2000

Once desired start up chemistry parameters have been established, you are ready to set the CAT 2000 to automatically maintain pH and sanitizer levels. Please refer to Illustration 4 for controller unit button designations. Button designations appear in bold type.

Selecting Acid or Base Feed

The CAT 2000 is preset from the factory to operate in the acid feed mode (when pH exceeds the setpoint, the pH chemical feeder is activated). If the sanitizer used at your facility causes the pH to decrease you must select base feed mode. To switch the controller between acid feed and base feed modes, perform the following steps.

1. Press and hold the **Hidden Button (#1)** for five seconds to enter advanced setup mode.
2. Scroll to pFD and press the enter key. Scroll to select A for acid feed or B for base feed. Press the Enter key to set your selection, then press the **Hidden Button (#1)** again to return to normal operating mode.

As the unit powers on, the digital pH readout will display an "A" or "B" indicating whether acid feed or base feed mode has been activated.

Calibrating pH

Readings from the CAT 2000 are far more accurate than those obtained from most liquid test standards. To match manual water testing results or compensate for a depleted or unclean pH sensor, the pH channel of the controller may be calibrated as follows:

1. Press the **pH Setpoint Adjustment Button (#4)** twice, illuminating the green "CALIBRATE" LED.
2. Press the arrow-shaped **pH Channel Increase Button (#2)** or **pH Channel Decrease Button (#3)** until the digital display matches your manual pH test reading.
3. The controller will automatically return to the normal operating mode after twenty seconds, storing any changes.

Changing the pH Setpoint

The CAT 2000 is preset from the factory to maintain pH at 7.5. To set pH control at a different level, perform the following:

1. Press the **pH Setpoint Adjustment Button (#4)** until the green "SET" LED is illuminated.
2. Press the arrow-shaped **pH Channel Increase Button (#2)** or **pH Channel Decrease Button (#3)** until the digital display matches your desired pH control level.
3. The controller will automatically return to the normal operating mode after twenty seconds, storing any changes.

Changing the ORP Setpoint

The CAT 2000 is preset from the factory to maintain ORP at 650 mV. This is the generally accepted world standard for safe drinking water. In order to meet Health Department standards for a particular pool or spa, the ORP setpoint may be changed to maintain a desired sanitizer level by performing the following:

1. Manually test pool or spa to confirm that the current sanitizer reading (chlorine, bromine, etc.) is the level you wish to maintain.
2. Note the ORP reading displayed by the controller.
3. Press the **ORP Setpoint Adjustment Button (#8)** until the green "SET" LED is illuminated.
2. Press the arrow-shaped **ORP Channel Increase Button (#6)** or **ORP Channel Decrease Button (#7)** until the digital display matches the ORP reading previously noted.
3. The controller will automatically return to the normal operating mode after twenty seconds, storing any changes.

The ORP setpoint should be changed as needed to maintain sanitizer residuals in conformance with Health Department standards.

Manually Activating pH Feed

To manually enable the pH chemical feeder press the **pH Channel Mode Selection Button (#5)** until the green "MANUAL" LED is illuminated. The chemical feeder will operate continuously for 30 minutes, and then automatically revert to "Auto" to prevent accidental over-feeding.

Manually Activating ORP Feed

To manually enable the ORP chemical feeder press the **ORP Channel Mode Selection Button (#9)** until the green "MANUAL" LED is illuminated. The chemical feeder will operate continuously for 30 minutes, and then automatically revert to "Auto" to prevent accidental over-feeding

Manually Disabling pH Feed

To manually prevent operation of the pH chemical feeder press the **pH Channel Mode Selection Button (#5)** until the red "OFF" LED is illuminated. Automatic pH feeding will be disabled. So that the user may have time to enter selections, the chemical feeding cycle will not be interrupted for approximately ten seconds.

Manually Disabling ORP Feed

To manually prevent operation of the pH chemical feeder press the **ORP Channel Mode Selection Button (#9)** until the red "OFF" LED is illuminated. Automatic ORP feeding will be disabled. So that the user may have time to enter selections, the chemical feeding cycle will not be interrupted for approximately ten seconds.

Automatically Controlling pH Feed

For automated control of the pH chemical feeder press the **pH Channel Mode Selection Button (#5)** until the green "AUTO" LED is illuminated. The chemical feeder will operate automatically in proportion to chemical demand. So that the user may have time to enter selections, the chemical feeding cycle will not be interrupted for approximately ten seconds.

Automatically Controlling ORP Feed

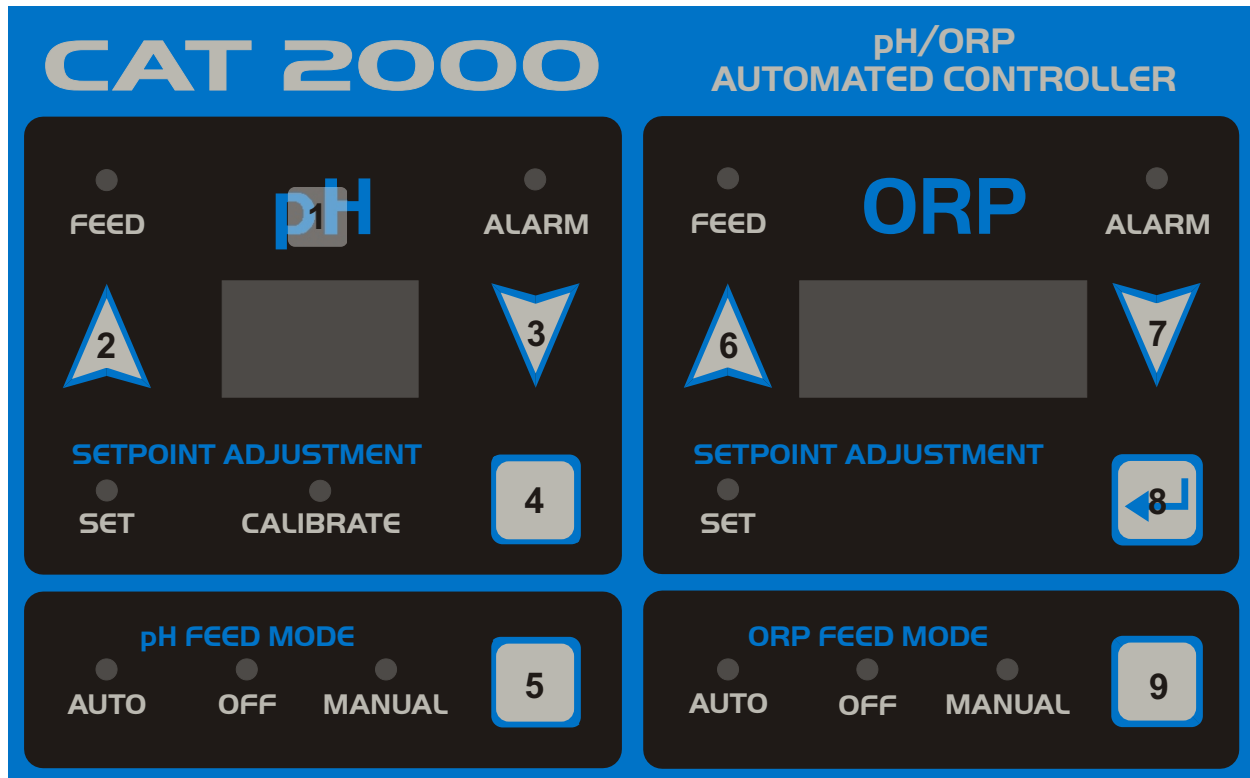
For automated control of the ORP chemical feeder press the **ORP Channel Mode Selection Button (#9)** until the green "AUTO" LED is illuminated. The chemical feeder will operate automatically in proportion to chemical demand. So that the user may have time to enter selections, the chemical feeding cycle will not be interrupted for approximately ten seconds.

About Proportional Feed

The CAT 2000 features an advanced proportional feed algorithm which constantly analyzes demand for chemicals and initiates feeding in intervals based on the relationship between setpoint and actual water sample values. This feature is highly valuable in maintaining precise control of water chemistry in most applications, but should be disabled for use with salt chlorine systems.

**ILLUSTRATION 4.
CAT 2000 SWITCH AND KEYPAD FUNCTIONS**

BUTTON DESIGNATION	DESCRIPTION
POWER	Controller Unit Power Switch
1	Hidden Button (Located Behind "pH" Text)
2	pH Channel Increase Button
3	pH Channel Decrease Button
4	pH Channel Setpoint Adjustment Button
5	pH Channel Mode Selection Button
6	ORP Channel Increase Button
7	ORP Channel Decrease Button
8	ORP Channel Setpoint Adjustment Button
9	ORP Channel Mode Selection Button



SECTION 9.

Advanced (Dealer) Setup Options

Beginning with the 2008 model year, the CAT 2000 controller incorporates an advanced programming menu and enhanced features. The advanced programming menu contains features which are usually implemented during initial dealer setup and do not need to be routinely changed by the operator.

Enhanced No-Flow Alarm

The no-flow alarm displays the prompt on the LED displays, in addition to activating both channel Alarm indicators and sounding the audible alarm:

no flow

Power On Display

At power on, the controller displays the pH feed mode and firmware version number. The pH feed mode is displayed on the pH channel LED display:

A

3.17

A Acid feed selected.

b Base feed selected.

The firmware version number is displayed on the ORP channel LED display:

3.17

Firmware version number (or later).

Entering Advanced Setup Mode

Find the **Hidden Button** (#1) located behind the large pH text over the pH digital display.

1. Press and hold the **Hidden Button** (#1) for five seconds to enter advanced setup mode.
2. Press the **Up** (#6) and **Down** (#7) arrow buttons to scroll through programming options.
3. Press the **Enter Button** (#8) to make a selection.

pH Feed Mode (Acid or Base Feed)

P.F d pH Feed. Selects the condition under which the pH feed output is activated.

A Acid (default). pH feed output is activated when the measured pH is greater than the pH setpoint, indicating the need to feed acid to decrease the pH of the water.

b Base. pH feed output is activated when the measured pH is less than the pH setpoint, indicating the need to feed base to increase the pH of the water.

pH Priority

P.P r pH Priority. Inhibits ORP feed when pH is not within .2 of setpoint.

OFF Off (default). The pH feed and ORP feed decisions are independent of each other.

On On. The pH Priority feature is enabled. Inhibits the ORP feed output when the measured pH value differs from the pH setpoint by more than 0.2 pH units. For example, when the pH setpoint is 7.5, then the ORP feed output will be enabled when the measured pH value is in the range 7.3 to 7.7; and inhibited when the measured pH is any value outside this range.

pH Proportional Feed

P.P F pH Proportional Feed. Selects either fixed setpoint or proportional control.

OFF Off. The pH feed output is activated based on a simple above or below setpoint decision. When the measured pH value is less than or equal to the pH setpoint (pH Feed: Acid selected) or greater than or equal to the pH setpoint (pH Feed: Base selected) the pH output feed is turned off. Otherwise, the pH feed output is turned on.

On On (Default). The pH feed output is activated based on the difference between the pH setpoint and the measured pH value. As the difference increases, the duration the pH feed output is turned on increases to 20, 30, 40, and 50 seconds of the 60 second cycle, and then the pH feed output is turned on continuously.

pH Overfeed Timer

P.OF pH Overfeed Timer. When Off is selected, the pH feed output will remain activated as long as a pH feed condition is indicated. When any other selection is made, an overfeed limit timer is enabled on the pH feed output. After the pH feed output has been turned on for a period of time greater than this limit, the pH channel is turned off and placed into an overfeed alarm condition which must be manually reset.

If pH Proportional Feed: On has been selected, the pH feed output must be on continuously for the overfeed time limit, rather than in the part of the proportional feed cycle in which the pH feed output is on for only a portion of the 60 second proportional feed cycle.

After the pH feed channel is placed into the overfeed alarm condition, the pH channel is turned off and the pH Feed Mode indicator flashes rapidly to indicate the alarm. Press the pH Feed Mode button to return the pH channel to the off, manual or automatic feed mode. This will reset the pH overfeed alarm and restart the overfeed timer. The pH overfeed alarm will also be reset if the controller is powered off and then back on.

The pH overfeed timer is disabled when the pH Feed Mode button is used to place the pH channel in the manual feed state.

OFF	Off - The pH feed output will remain on for an unlimited amount of time.
15	15 Minutes.
30	30 Minutes.
60	60 Minutes (1 Hour).
120	120 Minutes (2 Hours).
180	180 Minutes (3 Hours).
240	240 Minutes (4 Hours) - default

pH Low Alarm Limit

P.AL pH Alarm Limit Low. Sets the low alarm point for the pH channel. When the measured pH value is less than this limit, the audible alarm will be activated and the pH feed output will be disabled. The alarm will be cleared and feed will resume automatically when the measured pH value returns to within the non-alarm range.

6.8 Use the UP and DOWN buttons to select a value between 6.0 and 9.0 pH. The value must be less than the pH alarm high value.

The default value is 6.8 pH.

pH Alarm High Limit

P.A.H pH Alarm Limit High. Sets the high alarm point for the pH channel. When the measured pH value is greater than this limit, the audible alarm will be activated and the pH feed output will be disabled. The alarm will be cleared and feed will resume automatically when the measured pH value returns to within the non-alarm range.

8.2 Use the UP and DOWN buttons to select a value between 6.0 and 9.0 pH. The value must be greater than the pH alarm low value.

The default value is 8.2 pH.

ORP Proportional Feed

O.P.F ORP Proportional Feed. Selects either fixed setpoint or proportional control.

OFF Off. The ORP feed output is activated based on a simple above or below setpoint decision. When the measured ORP value is less than or equal to the ORP setpoint, the ORP output feed is turned on. Otherwise, the ORP feed output is turned off.

On On (Default). The ORP feed output is activated based on the difference between the ORP setpoint and the measured ORP value. As the difference increases, the duration the ORP feed output is turned on increases to 20, 30, 40, and 50 seconds of the 60 second cycle, and then the ORP feed output is turned on continuously.

ORP Overfeed Timer

O.O.F ORP Overfeed Timer. When Off is selected, the ORP feed output will remain activated as long as an ORP feed condition is indicated. When any other selection is made, an overfeed limit timer is enabled on the ORP feed output. After the ORP feed output has been turned on for a period of time greater than this limit, the ORP channel is turned off and placed into an overfeed alarm condition which must be manually reset.

If ORP Proportional Feed: On has been selected, the ORP feed output must be on continuously for the overfeed time limit, rather than in the part of the proportional feed cycle in which the ORP feed output is on for only a portion of the 60 second proportional feed cycle.

After the ORP feed channel is placed into the overfeed alarm condition, the ORP channel is turned off and the ORP Feed Mode indicator flashes rapidly to indicate the alarm. Press the ORP Feed Mode button to return the ORP channel to the off, manual or automatic feed mode. This will reset the ORP overfeed alarm and restart the overfeed timer. The ORP overfeed alarm will also be reset if the controller is powered off and then back on.

ORP Overfeed Timer - Continued

The ORP overfeed timer is disabled when the ORP Feed Mode button is used to place the ORP channel in the manual feed state.

OFF	Off - The ORP feed output will remain on for an unlimited amount of time.
15	15 Minutes.
30	30 Minutes.
60	60 Minutes (1 Hour).
120	120 Minutes (2 Hours).
180	180 Minutes (3 Hours).
240	240 Minutes (4 Hours) - default

ORP Alarm Low Limit

0.9L ORP Alarm Low Limit. Sets the low alarm point for the ORP channel. When the measured ORP value is less than this limit, the audible alarm will be activated and the ORP feed output will be disabled. The alarm will be cleared and feed will resume automatically when the measured ORP value returns to within the non-alarm range.

525 Use the UP and DOWN buttons to select a value between 200 and 995 pH. The value must be less than the pH alarm high value.

The default value is 525 mV.

ORP Alarm High Limit

0.9H ORP Alarm Limit High. Sets the high alarm point for the ORP channel. When the measured ORP value is greater than this limit, the audible alarm will be activated and the ORP feed output will be disabled. The alarm will be cleared and feed will resume automatically when the measured ORP value returns to within the non-alarm range.

900 Use the UP and DOWN buttons to select a value between 400 and 995. The value must be greater than the ORP alarm low value.

The default value is 900 mV.

Clear All Programming and Restore Factory Defaults

[] r Factory Clear. Returns all controller operating parameters to their default values.

Demonstration Mode

dEo Places the controller in Demo Mode for showroom display, presentations, etc.

Audible Alarm (Beeper)

bPr The Beeper setting allows the audible alarm to be enabled (default) or disabled.

Serial Interface

Sr I The CAT 2000 includes a standard Rs232 serial interface. A header assembly and cable are required to connect.

On I Online Communications. Use this selection when the controller is attached to a PC or building automation system.

Pr n Printer (default). Use this selection when the controller is attached to a CAT Serial Printer to make a hard-copy record of controller operating parameters. The printer is supplied with a cable to connect it to the controller. The CAT Serial Printer prints one data record at 15 minute intervals. Data recorded includes pH and ORP measured values, and the feed output and alarm status of both channels.

When all desired settings have been entered, press the Hidden Button or wait 30 seconds and the controller will return to default operating mode.

SECTION 10.

DISPLAY FUNCTIONS

Please refer to Illustration 5 with reference to designations of the various LED indicator lights on the front panel. Please note that for enhanced viewing the CAT 2000 features a "dead-front" display panel, so only illuminated indicators will be visible to the user. All lights and indicators are activated during power-on.

pH Feed Indicator (#1)

This green LED is illuminated whenever the pH chemical feeder is automatically or manually activated.

pH Alarm Indicator (#2)

Illumination of this red indicator is accompanied by an audible alarm and indicates that pH is outside of the safe operating range. Check that the pH chemical feeder is functioning properly and that an adequate chemical supply is available.

pH Digital Display (#3)

The red digital numeric display of the pH channel normally indicates the current pH of the pool or spa water (as calibrated) passing through the filtration system. Pressing the **pH Setpoint Adjustment Button** until the red "SET" LED is illuminated causes the pH setpoint to be displayed.

pH Setpoint Adjustment Mode Indicator (#4)

This green LED is illuminated whenever the controller is in the pH setpoint adjustment mode. Setpoint adjustment is allowed only when this LED is illuminated.

pH Calibrate Mode Indicator (#5)

This green LED is illuminated whenever the controller is in the pH calibration mode. Calibration of the pH display is allowed only when this LED is illuminated.

pH Automatic Control Indicator (#6)

This green LED is illuminated when pH is under automated control.

pH Manual Off Indicator (#7)

This red LED is illuminated when pH feeding is manually disabled.

pH Manual On Indicator (#8)

This green LED is illuminated when pH feeding is manually activated.

ORP Alarm Indicator (#10)

Illumination of this red indicator is accompanied by an audible alarm and indicates that ORP is outside of the safe operating range. Check that the ORP chemical feeder is functioning properly and that an adequate supply sanitizer is available.

ORP Digital Display (#11)

The red digital numeric display of the ORP channel of the controller normally indicates the current ORP (oxidation-reduction potential) of the pool or spa water passing through the filtration system. Pressing the **ORP Setpoint Adjustment Button** until the red "SET" LED is illuminated causes the ORP setpoint to be displayed.

ORP Setpoint Adjustment Mode Indicator (#12)

This green LED is illuminated whenever the controller is in the ORP setpoint adjustment mode.

ORP Automatic Control Indicator (#13)

This green LED is illuminated when ORP is under automated control.

ORP Manual Off Indicator (#14)

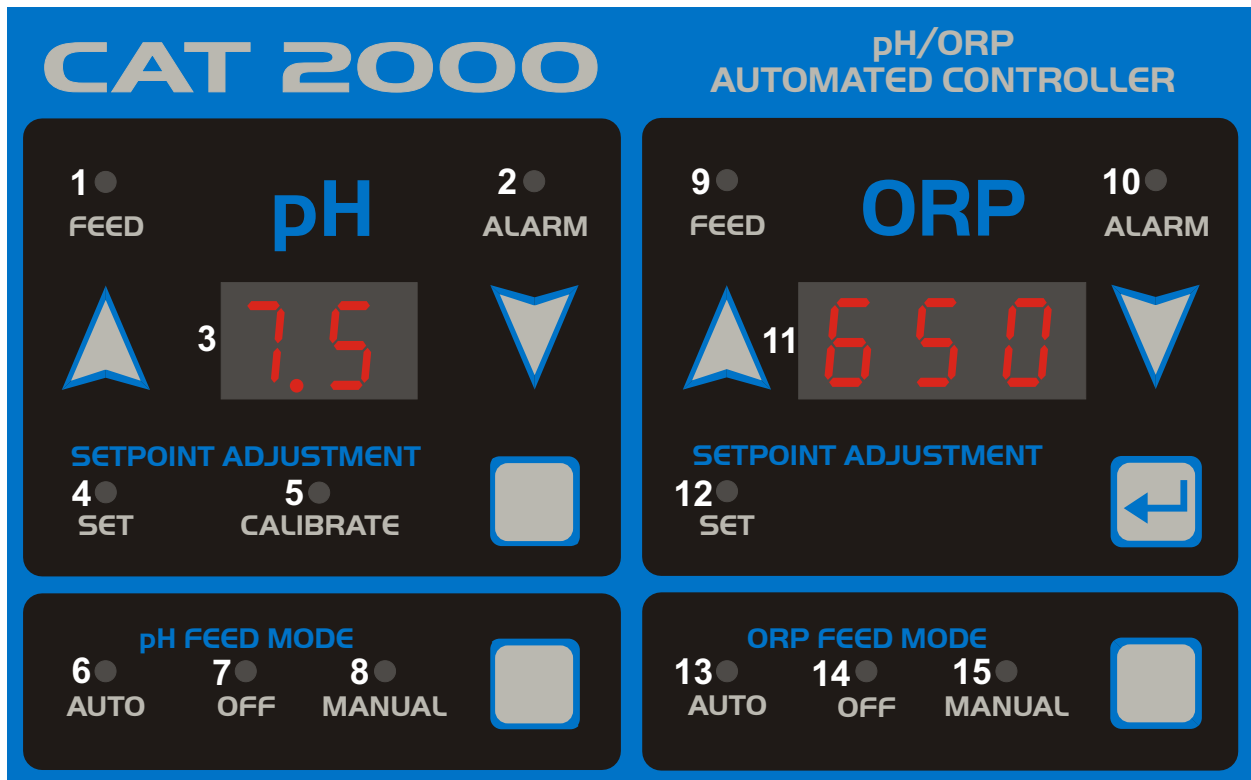
This red LED is illuminated when ORP feeding is manually disabled.

ORP Manual On Indicator (#15)

This green LED is illuminated when pH feeding is manually activated.

**ILLUSTRATION 4.
CAT 2000 INDICATOR DESIGNATIONS & FUNCTIONS**

DESIGNATION	COLOR / TYPE	DESCRIPTION
1	GREEN LED	pH FEED INDICATOR
2	RED LED	pH OUT OF RANGE ALARM
3	DIGITAL DISPLAY	pH INDICATOR/SETPOINT/CALIBRATION
4	GREEN LED	pH SETPOINT ADJUSTMENT MODE INDICATOR
5	GREEN LED	pH CALIBRATION MODE INDICATOR
6	GREEN LED	AUTOMATIC pH CONTROL INDICATOR
7	RED LED	pH FEED MANUALLY DISABLED
8	GREEN LED	pH FEED MANUALLY ACTIVATED
9	GREEN LED	ORP FEED INDICATOR
10	RED LED	ORP OUT OF RANGE ALARM
11	DIGITAL DISPLAY	ORP INDICATOR/SETPOINT
12	GREEN LED	ORP SETPOINT ADJUSTMENT MODE INDICATOR
13	GREEN LED	AUTOMATIC ORP CONTROL INDICATOR
14	RED LED	ORP FEED MANUALLY DISABLED
15	GREEN LED	ORP FEED MANUALLY ACTIVATED



CAT 2000 CONTROLLER

The CAT 2000 controller unit is virtually maintenance free. Cleaning of the enclosure, front panel and flow cell can be performed using a clean, soft cloth moistened with mild soap and water solution or glass cleaner. Use of abrasives or harsh chemicals may damage the enclosure and membrane switch panel.

WATER MAINTENANCE

Always test and record water chemistry readings in compliance with Health Department requirements using a quality manual test kit. Calibrate pH periodically as described earlier in this manual.

It is important to note that changes in pH, cyanuric acid concentration, total dissolved solids, and use of additional or alternative sanitizers will all affect the primary sanitizer residual level relative to ORP. It is important to maintain total alkalinity on a regular basis to ensure pH stability. To maintain a consistent sanitizer residual in parts-per-million (ppm), periodically adjust the ORP setpoint.

PRECISION CALIBRATION

The CAT 2000 controller provides instrument-grade accuracy which exceeds that of most liquid-standard water testing kits. Therefore, it may be preferable to calibrate pH using commercially available reference solutions.

SENSOR MAINTENANCE

The sensors must be clean and free from oil, chemical deposits and contamination to function properly. After saturation in pool or spa water, the sensors may need to be cleaned on a weekly or monthly basis depending on bather load and other facility-specific characteristics. Slow response, increased need to calibrate pH, and inconsistent readings are indications that the sensors are in need of cleaning.

To clean the sensors, disconnect from the controller and carefully remove them from the flow cell. Clean the reference junction (the white teflon ring at the bottom of sensor body) with a soft tooth brush and regular tooth paste. A household liquid dishwashing detergent may also be used to remove any oil. Rinse with fresh water, replace teflon thread-seal tape, and reinstall sensors. Hand tighten only.

Never allow a pH or ORP sensor to dry completely. Drying will damage the reference junction and void the sensor warranty.

SENSOR REPLACEMENT

CAT Professional Series pH and ORP sensors are engineered to provide the highest performance and longest possible functional service life. If properly cleaned sensors provide unstable readings or require excessive calibration, the pair of sensors should be replaced. For optimum controller performance, replace with genuine CAT Professional Series sensors PRO15-2 and PRO25-2.

SENSOR STORAGE

Exposure to atmospheric conditions will cause the sensor tips to dry out. Always remove and properly store sensors in the soaking caps provided if sensors are to be removed or stored for one hour or longer. Although CAT Professional Series sensors are freeze-resistant, they must be protected from freezing temperatures when not in use.

Store sensors in the soaking caps provided, making sure that each container is filled with the original storage solution or clean water. If the storage containers have been misplaced, store sensors individually in small glass or plastic containers with clean water covering sensor tips.

CONTROLLER STORAGE

The controller unit is subject to damage by electro-static discharge (ESD) when the sensor cables are disconnected. Always reinstall the BNC protective covers prior to storing or transporting the CAT 2000 controller unit.

WINTERIZATION

The sensors should be prepared for storage as outlined above and protected from freezing temperatures. Although the CAT 2000 controller is designed to withstand a broad temperature range, winter storage in a secure location is desirable.

The flow cell and poly tubing must be drained prior to exposure to freezing temperatures. Either purge all water using compressed air or thoroughly drain through the valve ports and tubing connections.

SECTION 12.

TROUBLESHOOTING

Each CAT 2000 controller is manufactured to the highest quality standards and then thoroughly tested before leaving the factory. State of the art design and fabrication technology ensure years of trouble free operation. Most apparent malfunctions can be solved through the following corrective actions:

No lights are illuminated when controller is powered on.

1. Check circuit breaker and/or receptacle for proper operation. Connect to functional grounding-type GFCI protected power source.
2. Check for damaged power cord or connector.

Alarm light(s) and tone are observed.

1. Ensure that filtration system is functioning properly, flow is adequate, and water chemistry is in balance.
2. Ensure that sensors and power cables are properly connected to their respective connectors on the controller unit.
3. Check chemical feeders for proper operation.
4. Ensure that flow sensor is properly installed and connected.

Both pH and ORP digital readouts display illogical values.

1. Sensor cable connections may be reversed. Ensure that sensor cables are properly connected to their respective BNC connectors on the controller unit.
2. Ensure that filtration system is functioning properly, flow is adequate, and water chemistry is in balance.

ORP pH chemical feeder is not activated as expected.

1. Make sure "auto" ORP feed mode is selected.
2. Check ORP setpoint.

pH chemical feeder is not activated as expected.

1. Ensure that acid/base feed mode is properly set for your chemical feeding requirements.
2. Make sure "auto" pH feed mode is selected.
3. Check pH Setpoint.

Chlorine or bromine residual is too high or too low.

1. pH, cyanuric acid concentration, total dissolved solids, and use of additional or alternative sanitizers will all effect the sanitizer residual level relative to ORP. Consider the effect of any chemicals recently added to the pool or spa.
2. Check and adjust ORP setpoint.

pH requires frequent calibration.

1. Clean the sensors as outlined in the maintenance section. If sensors continue to provide unstable readings after cleaning, replace sensors.

pH or ORP readings are inconsistent or slow in response.

1. Ensure that sensor cables are properly connected to their respective BNC connectors on the controller unit.
2. Clean the sensors as outlined in the maintenance section. If sensors continue to provide unstable readings after cleaning, replace sensors.
3. Check to ensure that all electrical equipment in the facility pump room is properly bonded.

pH or ORP chemical feeder runs continuously.

1. Make sure "auto" feed mode is selected.
2. Ensure that chemical feeders are properly connected to their respective connectors on the controller unit.

pH or ORP feeding overshoots the setpoint.

1. Ensure that each chemical feeder is properly sized.
2. Check concentration of sanitizer or pH chemical.

pH or ORP feeding does not reach the setpoint.

1. Ensure that each chemical feeder is properly sized.
2. Check concentration of sanitizer or pH chemical.
3. Check chemical feeders and injection points for proper operation.

SECTION 13.**TECHNICAL SPECIFICATIONS**

Display Range:	pH	0.0 - 9.9
	ORP	100 - 995 mV
Setpoint Range:	pH	7.0 - 8.0
	ORP	525 - 995 mV
Default Settings:	pH	7.5
	ORP	650 mV
Calibration Range:	pH	2.0 pH +/-
Control Accuracy:	pH	0.1 pH
	ORP	5.0 mV
Mode Selections:	pH Feed	Auto/Off/Manual
	ORP Feed	Auto/Off/Manual
	pH Selection	Acid/Base
	pH Mode	Auto/Set/Calibrate
	ORP Mode	Auto/Set
Safety Systems:	pH & ORP	Audible & Visual Alarms
	Controller Unit	Diagnostic Self Test
	Required	Flow Sensor
	Optional	Remote Alarm
pH & ORP Sensors:	Casing Material	Molded ABS
	Junction Type	Teflon Reference
	Wet End	½" NPT
	Connector	Shielded BNC
Sensor Output Signal Requirements	0-14 pH	0-1000mV ORP
Power Input:	120/240 Volt AC, 10 AMP 50/60 Hz	
Outputs:	pH Feed	4 Amp / 120 VAC
		4 Amp/ 240 VAC
		1 Amp / Dry Contact
	ORP Feed	4 Amp / 120 VAC
		4 Amp / 240 VAC
		1 Amp / Dry Contact
	Remote Alarm	1 Amp / Dry Contact
Optional Equipment	RS232 Computer Interface Cable	
	Thermal Printer	
	Three-Year Professional Series Sensors	

LIMITED WARRANTY

Hayward® warrants the CAT 2000 automated controller to be free of defects in material and workmanship for a period of five years from date of shipment from our factory or authorized distributor. Liability under this warranty is limited to the repair or replacement of any device or component which is returned to the factory within five years of delivery to original purchaser, shipping prepaid, and which is found to be defective upon examination.

Hayward® warrants all flow sensors, fittings and accessories to be free of defects in material and workmanship for a period of one year from date of shipment from our factory or authorized distributor. Professional Series pH and ORP sensors are warranted for a period of two years from date of shipment from our factory or authorized distributor. Liability under this warranty is limited to the repair or replacement of any device or component which is returned to the factory within the warranty period, shipping prepaid, and which is found to be defective upon examination.

Hayward® disclaims all liability for damage during transportation, for consequential damage of whatever nature, for damage due to handling, improper installation or operation, and for determining suitability for the use intended by the purchaser. Hayward® makes no warranties, either expressed or implied, other than those stated above. No representative has authority to change or modify this warranty in any respect. After obtaining a Return Merchandise Authorization form, any warranty claims should be directed to the following address:

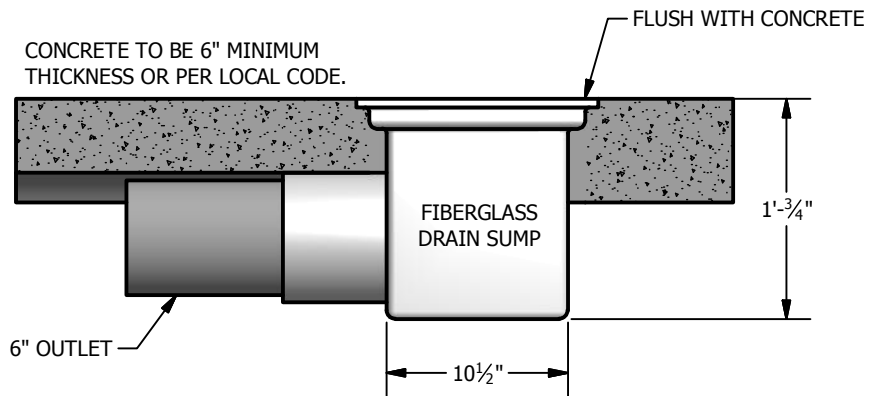
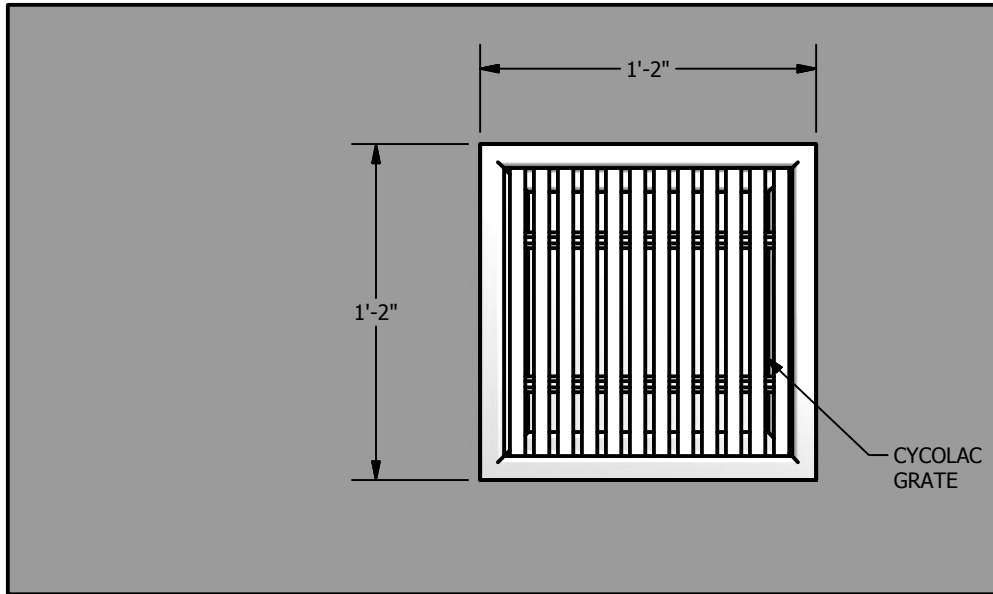
Hayward Commercial Pool Products
10101 Molecular Drive Suite 200
Rockville, MD 20850 (USA)
800-657-2287
301-838-4001

2

1

B

B



A

A

NOTE
DRAIN CAPACITY OF 135 GPM AT 1.5 FPS

WWW.RAIN-DROP.COM



T-419.207.1229

F-419.207.8902

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PRODUCT NAME

12 X 12 DRAIN BOX-6" OUTLET

SHEET 1 OF 1

PRODUCT PART #

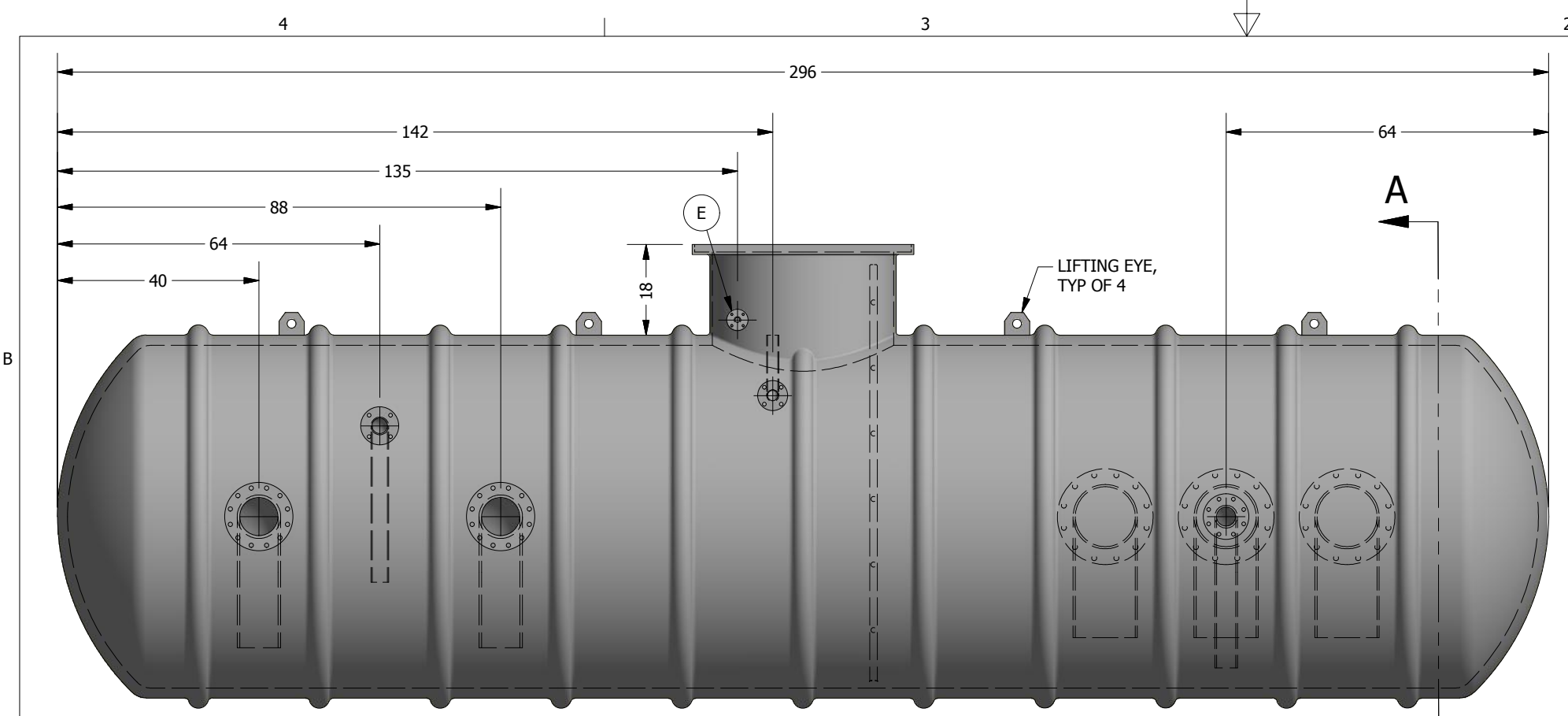
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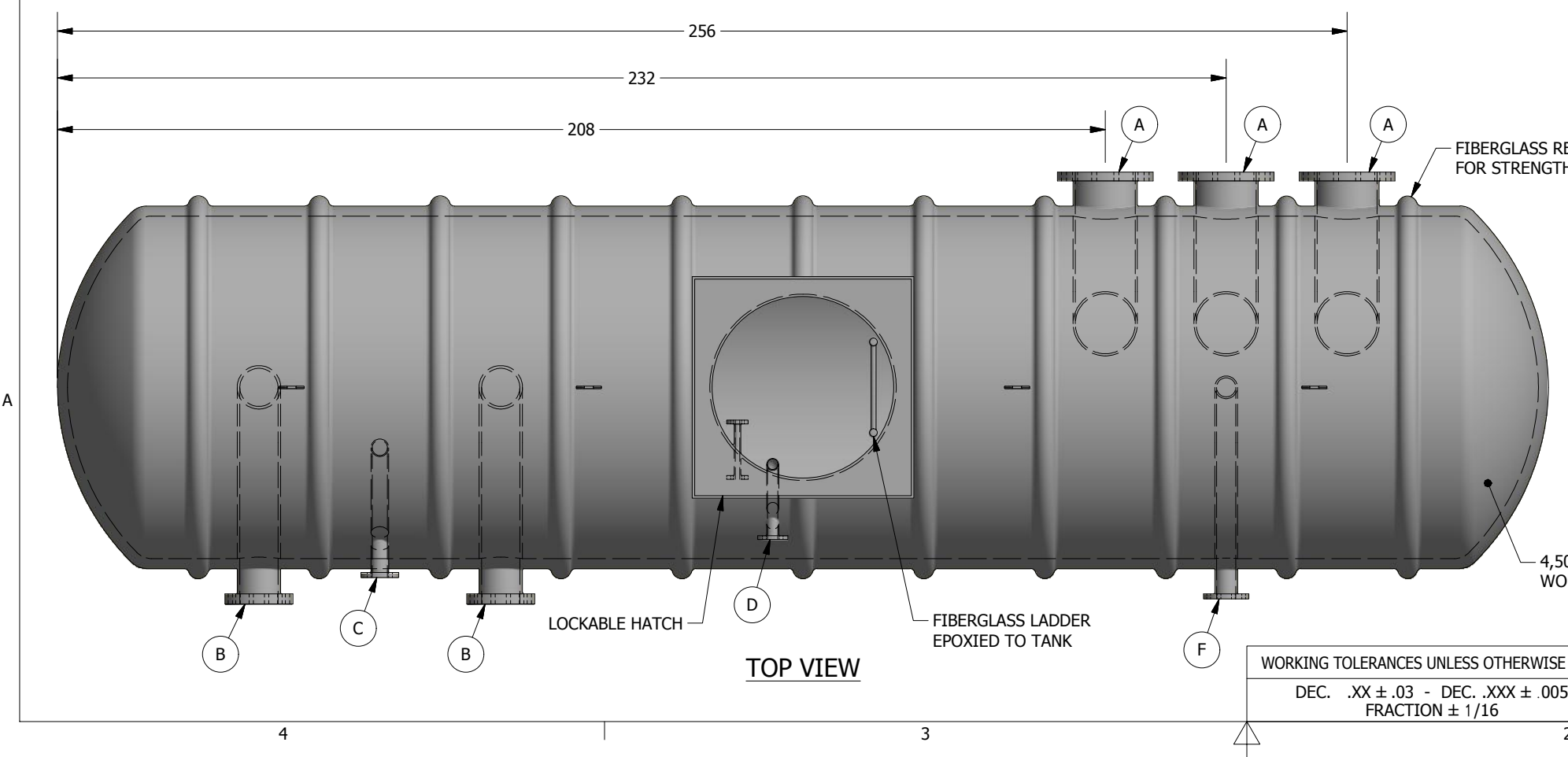
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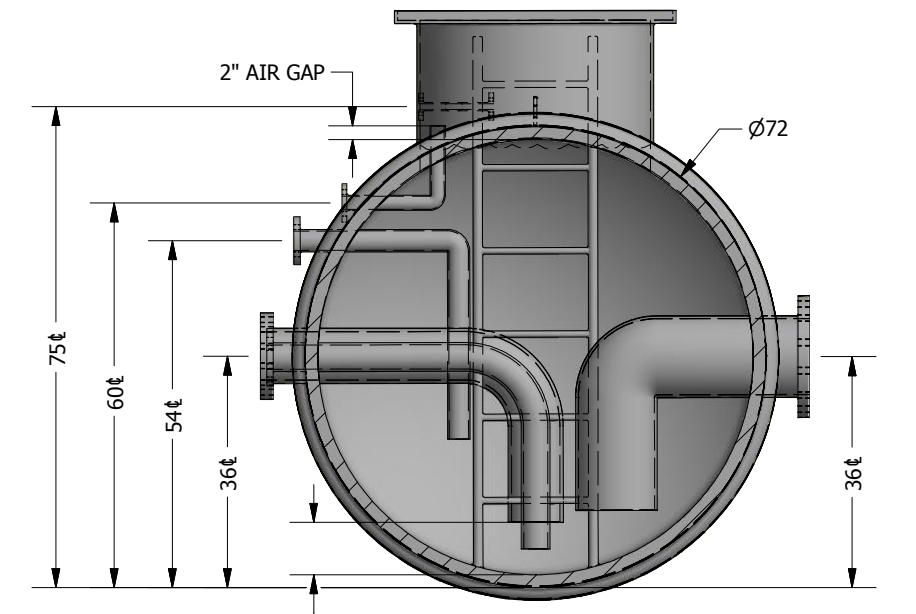


SIDE VIEW



TOP VIEW

LINE	DESCRIPTION	SIZE
A	SPRAYGROUND DRAIN RETURN PORT	12" 150# FIBERGLASS FLANGE
B	FEATURE PUMP SUCTION PORT	8" 150# FIBERGLASS FLANGE
C	FILTER PUMP RETURN PORT	3" 150# FIBERGLASS FLANGE
D	OVERFLOW PORT	2" 150# FIBERGLASS FLANGE
E	FRESH WATER FILL PORT	1" 150# FIBERGLASS FLANGE
F	FILTER PUMP SUCTION PORT	4" 150# FIBERGLASS FLANGE



SECTION A-A

PLEASE NOTE:
ALL DIMENSIONS ARE IN INCHES UNLESS SPECIFIED OTHERWISE.

Rain Drop Products, LLC
2121 Cottage St. Ashland, Ohio 44805 T 419.207.1229
web www.rain-drop.com

TITLE		
4500 GALLON RESERVOIR, FIBERGLASS		
SIZE	DWG NO	REV
B	RSVR-F45-3-2-01	1
DRAWN	DATE	SHEET
FSpialek	4/13/2016	1 OF 1

WORKING TOLERANCES UNLESS OTHERWISE SPECIFIED
DEC. .XX ± .03 - DEC. .XXX ± .005
FRACTION ± 1/16

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4,500 GALLON CAPACITY FILAMENT
WOUND FIBERGLASS TANK

SECTION 22 01 00 - BASIC PLUMBING REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section of Division 22

1.2 SUMMARY

- A. This Section includes mechanical (Plumbing) requirements

1.3 DEFINITIONS

- A. The following definitions of terms and expressions used in mechanical and electrical sections are in addition to listing given in Supplementary General Conditions:
 - 1. Provide: shall mean "furnish and install".
 - 2. Install: shall mean installation of item.
 - 3. Furnish: shall mean procurement and delivery to jobsite of equipment for installation.
 - 4. Herein: shall mean the contents of a particular section where his term appears.
 - 5. Replace: Shall mean remove and provide new.
 - 6. Reinstall: Shall me to replace existing item in same location, or new location, as indicated. Provide all necessary hardware, extension of existing conduit and wire, etc as required.
 - 7. Indicated: shall mean "indicated on contract drawings."
 - 8. Section shall mean one of the following portions of the project specifications
 - 9. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct shafts, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawl spaces, and tunnels.
 - 10. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.

11. Exposed, Exterior Installations: Exposed to view outdoors, or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.
12. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in duct shafts.
13. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants, but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.
14. The following are industry abbreviations for plastic materials:
 - a. ABS: Acrylonitrile-butadiene-styrene plastic.
 - b. CPVC: Chlorinated polyvinyl chloride plastic.
 - c. PE: Polyethylene plastic.
 - d. PVC: Polyvinyl chloride plastic.
15. Piping: includes in addition to pipe, also fittings, valves, hangers, and other accessories, which comprise a system.
16. Wiring: Conduit, fittings, wire, junction and outlet boxes, switches, cutouts, and receptacles and items necessary or required in connection with or relating to such wiring.
17. Trades: refers to those specifically skilled in the work performed under a particular section of this contract.
18. "General Contractor/G.C.": shall mean that contractor responsible for the work of Divisions 2 through 14 inclusive.
19. "Plumbing Contractor/P.C." shall mean the contractor or sub-contractor responsible for the Plumbing work described work in Division 22 that relate to the plumbing drawings. (Some general construction work may pertain to this work.)
20. "Mechanical Contractor/M.C." shall mean the contractor or sub-contractor responsible for the HVAC work described in Division 23 that relate to the mechanical drawings. (Some general construction work may pertain to this work.)
21. "Electrical Contractor/E.C." shall mean the contractor or sub-contractor responsible for the electrical work described in Division 26. (Some general construction work may pertain to this work.)

1.4 CONTRACTOR

- A. The term Contractor as used throughout this Division of the Specifications shall be understood to mean the Plumbing Contractor or firm awarded the Contract for the Plumbing work. For projects with one prime the Plumbing Contractor shall be understood to mean the sub-contractor to the General Contractor.

1.5 DRAWINGS

- A. The Plumbing Systems are indicated on the respective Drawings, but attention is called to the fact that certain pertinent information and details may appear on other drawings such as the Architectural Drawings, and these will become a part of each Contract. The Plumbing Contractor shall refer to the Architectural for information such as, but not limited to, locations of fire rated assemblies, ceiling types and heights, chase dimensions, structural steel dimensions, etc. The Architectural and Plumbing Drawings are intended to be complimentary. In the event of any discrepancies between them or between any of the Drawings and these Specifications, the Architect shall be notified promptly and will issue his interpretation to all interested parties. So far as arrangement of equipment to conform to construction conditions is concerned the Architectural Drawings and Details shall govern, rather than the Plumbing Drawings.
- B. Attention is also called to the fact that although the Plumbing Drawings are often sealed Drawings, they are also diagrammatic; i.e., not every duct offset or piping elbow is shown that will be required for the actual installation. It shall be the responsibility of the Plumbing Contractor to coordinate the actual installation of equipment, ductwork and piping with all other building system components and other Contractors, and shall provide all necessary offsets, transitions, etc. as required at no additional costs to this Contract.

1.6 TRUE INTENT

- A. The Drawings and Specifications are intended to provide a complete and perfectly operating system. Therefore, it is specifically agreed and understood by the Contractor that anything, be it labor, material or equipment, which is not described in the Specifications or specifically shown on the Drawings, but is necessary for the operation and completion of a properly operating system, according to the true intent of the Specifications and Drawings and as interpreted by the Architect, shall be furnished by the Contractor as a part of his Contract, at no extra charge, as though it were specifically detailed and described.
- B. Throughout the various specification sections and the drawings, material, equipment, and installation procedures are specified. The contractor shall coordinate between his or her own staff, subcontractors, and suppliers to provide complete and operational Plumbing systems. Separate specification sections are not intended to assign work. It is the contractor's responsibility to assign work and insure that all work and material are provided and coordinated between all parties involved in the construction of the systems.

1.7 LINES, GRADES AND SURVEYS

- A. All necessary surveys, lines, grades, elevations, and measurements are the responsibility of the Contractor desiring the information for the proper installation of his work. The Contractor shall verify all lines, grades and dimensions as shown on the Drawings. The Contractor shall verify all lines and grades with the local controlling agency.

- B. Grades, elevations and locations shown on the Drawings are approximate and the Contractor shall check all such information on the site before proceeding with the work.

1.8 PERMITS, FEES AND CODES

- A. Nothing contained in this specification or shown on the drawings is intended to conflict with the codes, laws, ordinances, rules or regulations of Federal, State, or Local Municipal Governmental Authorities having jurisdiction over the premises, including N.J. Uniformed Construction Code, The International Building Codes, The National Standard Plumbing Code, the National Board of Fire Underwriters Inspection Agency, the National Electrical Code (NFPA 70-1990), and the Owners Insuring Agency. All such codes, laws, ordinances, rules and regulations are hereby incorporated and made a part of these specifications. Fixtures, appliances and equipment, which are subject to UL tests, shall bear such approval. All work performed on this project and all equipment furnished for this project shall be in conformance with the regulations and requirements of the Occupational Safety and Health Act (OSHA).

1.9 DAMAGE TO EXISTING CONDITIONS

- A. The contractor shall assume full responsibility for damage caused by them or their employees, or their sub-contractors to the building or building Plumbing/electrical systems during the execution of this contract.
- B. Existing conditions shall be defined as new work that is in place.

1.10 METHOD OF PROCEDURE

- A. The Drawings accompanying these Specifications are diagrammatic and intended to indicate the approximate and relative locations of the Plumbing Systems. Installation, connection, and inter-connection of all components of the Plumbing Systems shall be complete and made in accordance with the manufacturer's instructions and best practices of the respective trades.
- B. Erect all parts of equipment to be furnished under his Contract at such time and in such manner as not to delay or interfere with any other trade performing work at that time.
- C. Contractor shall confer with all other trades as to the locations of different lines of pipe, ducts, conduit, and electrical equipment before erecting any Work, so as to avoid interference. In case of conflict, equipment shall be relocated, without additional cost, as directed by the Engineer regardless of which equipment was installed first. Contractor shall cooperate all trades for the proper securing and anchoring of all Work included within these Specifications.
- D. Care shall be used in the erection and installation of all equipment and materials to avoid marring surfaces of the work of other trades or existing building. The Contractor will be held

responsible for all such damage caused by the lack of precaution and due to negligence on the part of his workmen.

1.11 MATERIALS AND EQUIPMENT

- A. All materials and Equipment shall be new, and shall conform to the grade, quality and standard specified here in.
- B. All Equipment offered under these Specifications shall be limited to products regularly produced and recommended for service, in accordance with engineering data, rating, or other comprehensive literature made available to the public and in effect at the time of opening of bids.
- C. Equipment shall be installed in strict accordance with manufacturer's instructions for type and capacity of each piece of equipment used. Contractors shall obtain the instructions which shall be considered part of these Specifications. Type, capacity and application of Equipment shall be suitable and shall operate satisfactorily for the purpose intended in the respective Plumbing Systems.
- D. Equipment shown on the Drawings illustrates the general space requirements and each Contractor shall install only such equipment which shall not necessitate changes in the building or arrangements. If changes are required due to substitution the Contractor shall pay ALL costs stemming from such change. No such changes shall be made except with Engineer's written approval.

1.12 ANCHOR BOLTS

- A. Provide and set in place at the time the foundations, bases, or curbs are poured, all necessary anchor bolts as required for the various equipment specified herein, to be furnished by him under these Specifications. Anchor bolts must be of the hook type and of the proper sizes and length to suit the apparatus. The bolts shall be set in pipe sleeves of approximately twice the bolt diameter and as long as the imbedded length of the bolt.
- B. When the Equipment is set in its proper position, the bolt sleeves and the space between the rough foundations, bases or curbs of the Equipment shall be completely filled with one inch of non shrinking cement grout
- C. Contractor shall assume all responsibility for the location of all anchor bolts for the Equipment furnished by him under these Specifications, and must have a man present at the time the foundation, bases, or curbs are poured.

1.13 ANCHORS

- A. Direct all pipe motion to expansion bends, loops, or joints by heavy pipe clamps and/or structural steel sections welded to pipe lines and clamped or welded to structural members as

directed by the Engineer. Points at which anchors are located and secured shall be approved by the Engineer so that no structural members shall be unduly strained- Where possible, anchor points shall be on members running parallel to the piping being anchored.

1.14 CUTTING AND PATCHING

- A. Openings required in floors, walls, roofs, etc. shall be cut, supported, and patched by this Contractor.

1.15 LINTELS AND FRAMED OPENING

- A. In areas of new construction provide framed roof or floor openings and lintels in new masonry walls.

1.16 PRESSURE VESSELS

- A. All tanks subjected to pressure shall conform to A.S.M.E. Code and the regulations of the controlling State Agencies. They shall bear the stamp of A.S.M.E. Test Code Compliance and National Insignia Number and the required stamp of any controlling State agency. This shall include but not be limited to: boilers, water heaters, expansion tanks, storage tanks, and heat exchanger barrels. In addition, provide adequate and code required clearance around all equipment.

1.17 RUBBISH REMOVAL AND CLEAN-UP

- A. Periodically, and at the completion of the work, Contractor shall remove from the building and site all rubbish and accumulated materials whatever nature not caused by other trades, and shall leave the work in a clean, orderly and acceptable condition. In addition, at the conclusion of the Project, before the work is deemed ready for final inspection, each Contractor shall clean all items of paint splashes, grease stains, dust, finger marks, and all other unsightly marks. The contractor shall provide dumpsters, trash containers, hauling and approved landfill dumping fees associated with his portion of work.

1.18 TESTS

- A. The following requirements are supplementary to test requirements specified for individual Equipment or systems in Mechanical Sections.
 - 1. Written notice of date of test shall be given in ample time to all concerned.
 - 2. Concealed or insulated work shall remain uncovered until required tests have been completed. If construction schedule requires, arrange for prior test on parts of the system.

3. As soon as conditions permit, conduct preliminary test of Equipment to ascertain compliance with specified requirements. Make needed changes, adjustments, or replacements as preliminary tests may indicate, prior to acceptance test.
4. Conduct pressure, performance, and operating tests as specified or required for each system or equipment unit in presence of the Engineer, as well as representatives of agencies having jurisdiction.
5. Each Plumbing Contractor shall furnish labor, material, and instruments and shall bear all other costs in connection with tests.
6. Obtain certificates of approval and/or acceptance in compliance with regulations of agencies having jurisdiction. Work shall not be deemed complete until such certificates have been delivered to the Owner.
7. Each Contractor shall instruct representatives of Owner in all details of operation and maintenance of systems installed under these Contracts. Such instruction shall continue as long as necessary or as directed.
8. Testing shall prove conclusively that all Plumbing Systems operate properly, efficiently, and quietly in accordance with the intent of the Drawings and Specifications.

1.19 PROTECTION

- A. Contractor shall effectively protect his work and materials with tarpaulin of heavy plastic material against dirt, water, chemicals, plaster or damage during the whole period of installation or until directed to remove the coverings by the Architect. Any damaged materials must be removed and replaced by the Contractor without additional cost regardless of the cause of the damage. All openings in pipes, fittings ductwork, conduit, etc., must be effectively sealed to exclude dirt, sand, and other foreign substances. All pipe trenches, tank pits, or similar excavation shall be maintained free of water at all times.

1.20 GUARANTEES AND WARRANTIES

- A. All work performed shall be guaranteed in writing by the Contractor for a period of one (1) year after substantial completion. The Contractor shall remedy any defects due to faulty materials or workmanship, and pay for any damage to other work resulting therefrom which shall appear within a period of one (1) year from date of occupancy by the Owner or the date of the Owner's Certificate of Final Payment of the total contract, and in accordance with the terms of any special guarantees provided in the Contract. The Owner shall give notice of observed defects with reasonable promptness. All questions arising under this article shall be decided by the Owner notwithstanding final payment.

1.21 CLEANING OF SYSTEMS

- A. The Contractors shall thoroughly clean all pipe and ductwork systems to remove all grease, oil, scale, rust, sand, and other foreign material after tests have been made and before the building is turned over to the Owner.
- B. All strainers shall be opened and cleaned thoroughly.
- C. The interior of all air handling equipment, ductwork and all filters shall be cleaned thoroughly before the building is accepted by the Owner.
- D. Should the Contractor put any substance into any system to aid in the cleaning of it, all traces of such material shall be removed before the system is considered clean. All such substances, if used, shall be free from any acid that will set or injure valve seats in any way.

1.22 INSTRUCTION TO OWNER

- A. At the completion of the work, and before final acceptance of the building by the Owner, each Contractor, together with the representatives of the manufacturers of the equipment installed by the Contractor, shall instruct the designated representatives of the Owner in the care, adjustment, maintenance and operation of equipment installed by him.
- B. A representative of the manufacturer of each piece of equipment shall inspect his respective pieces of equipment, make final adjustments, place them in a satisfactory working condition, and instruct the owner in their operation. Each representative shall also provide a letter to the Engineer indicating that an inspection has been performed, instruction given, and the equipment is installed and operating in conformance with the manufacturer's written installation instructions.

1.23 SUBSTITUTIONS

- A. Various items of equipment and materials that have been used as the basis for mechanical system design have been specified by a manufacturer's name and model number. Another manufacturer's product may be submitted for consideration as a substitute in accordance with the requirements set forth in Division 1. The Architect/Engineer shall be the sole judge as to the comparability of an item of equipment that is submitted for approval as a substitute for that which is specified. Each of the Contractor's substitute proposals shall include all labor and materials that will be required to install the equipment and make it operate satisfactorily in accordance with the original design concept. He shall include such things as changes in piping, valves, supports, fittings, ductwork, motors, controls, electrical wiring, and thermal insulation. It shall be the responsibility of the Contractor to make certain that substitute equipment, which has been accepted by the Architect/Engineer, will fit into the designated spaces. He shall make the necessary field measurements in order to determine that there is adequate space for the equipment, taking into consideration the clearances that are required for connections and servicing. He shall be responsible for any additional cost of other contractors resulting from the substitution.

1.24 COORDINATION DRAWINGS

- A. The Contractor and trade subcontractors shall use the construction documents or shall prepare their own coordination drawings, (at the contractor's option) to insure that the installation of all work is coordinated. If the construction documents are used, the contractors are responsible to insure that all work is coordinated regardless of how equipment and systems are shown on the drawings.
- B. Layout of plumbing, mechanical, and electrical systems, equipment, fixtures, piping, ductwork, conduit, specialty items, and accessories indicated on the Contract Drawings is diagrammatic. Variations in alignment, elevation, and detail will be required to avoid interference and satisfy architectural and structural limitations are not necessarily shown.
- C. The Contractor and trade subcontractors shall work together to coordinate the installation of all equipment and material to be installed. If conflicts are found they shall be brought to the attention of the Architect.
- D. The Contractor and trade subcontractors shall, at a minimum, hold weekly coordination meetings during the construction process.

1.25 SUBMITTALS AND SHOP DRAWINGS

- A. General: Follow the procedures specified in Division 1 Section on "SUBMITTALS". The contractor shall submit a schedule of shop drawings to be submitted which shall indicate manufacturer, model, and date submittal will be delivered to the Engineer's office.
- B. Fax machine sheets or photocopies of same shall not be accepted as shop drawings.
- C. Shop Drawings and Equipment Submittals shall be submitted to and be approved by the Engineer before any Equipment is ordered or Work is accomplished. They shall clearly indicate the location, service and function of each particular item. Submittals shall be in the form of manufacturers printed catalogs, pamphlets, technical data, test information, and installation instructions. Identification shall be made in ink with specific model numbers highlighted and accessories highlighted. Shop Drawings and Submittals shall both be completely referenced and identified. Descriptive information and data in Submittals shall be complete. Those Drawings and Submittals which only show partial or general information will not be acceptable and will be returned to the Contractor. Contractor shall inform the Engineer, in writing, of any deviations in the Shop Drawings and Submittals where such deviations are a departure from the Contract Documents. This written advisory shall, accompany the initial submittal and shall state the reasons for the deviations.
- D. Shop Drawings and Submittals which are prepared by the various Sub-Contractors and equipment suppliers shall first be sent to the Contractor for checking and eventual formal submission to the Engineer. Contractor shall check these drawings and submittals with respect to measurements, materials, identifications, and details so as to make certain that they conform to the intent of the Contract Documents. Drawings and Submittals which are found

to be inaccurate or otherwise in error shall be returned by the Contractor to originating party for correction before submission to the Engineer.

- E. The Engineer shall check the Shop Drawings and Submittals to see if they conform with the design concept for this project and whether they comply with the information given in the Contract Documents. Approval of the shop drawing does not release the contractor from providing all specific requirements of the equipment and installation that may not have been listed on the shop drawing but were called for on the drawings or in the specifications. Contractor shall be responsible for dimensions that are to be confirmed at the job site for coordination in the ordering and assembly of Mechanical Equipment, for information that pertains solely to fabrication processes or to techniques of construction, and for coordination of the Work of all trades.
- F. The following specific items and information shall be included in all Shop Drawings and Submittals:
1. Capacity and performance data as shown on the Equipment Schedules or as specified. Complete descriptive data on the Equipment so that compliance with the Specifications can be ascertained.
 2. Submittals for all valves, specialties, and miscellaneous items which are specified, scheduled, or shown.
 3. Electrical wiring diagrams (power and control) that show the complete control of electric motor driven equipment which is to be furnished by Division 22 & 23.
- G. Mechanical Systems and Equipment which have been installed without having been previously approved by the Engineer may be condemned by him. They shall be removed -if so condemned and be replaced with systems and Equipment that are approved. This Work shall be done with out additional cost to the Owner.
- H. Shop Drawings and Equipment submittals shall be revised as often as may be necessary in obtaining the Engineer's approval. Only Equipment submittals and Shop Drawings for the installation of systems shall be used at the construction site which have Engineers stamp of approval. Contractor shall not install any equipment or materials in this Contract unless they have been previously approved by the Engineer. Contractor shall not delay the progress of the Work by resorting to unnecessary delays in resubmitting Shop Drawings or submittals for approval.
- I. When the Shop Drawings have been rejected or have been returned for additional information, no longer than 3 weeks shall elapse between receipt of returned material and the resubmittal of revised or new information.
- J. It is suggested that the Contractor obtain from his various Equipment suppliers, at the time that Shop Drawings and submittals are prepared, all of the information that will ultimately be required for the Operation and Maintenance Manuals.

1.26 AS-BUILT DRAWINGS

- A. Prepare and maintain record drawings and documents in accordance with the requirements in Division 1. In addition to the requirements specified in Division 1, indicate the following installed conditions:
1. Mains and branches of piping systems, with valves and control devices located and numbered, concealed unions located, and with items requiring maintenance located (i.e., traps, strainers, expansion compensators, tanks, etc.). Valve location diagrams, complete with valve tag chart. Indicate valve number on as-built drawings. Indicate actual inverts and horizontal locations of underground piping.
 2. Equipment locations (exposed and concealed), dimensioned from prominent building lines.
 3. Approved substitutions, Contract Modifications, and actual equipment and materials installed.
 4. Contract Modifications, actual equipment and materials installed. Revise schedules on the drawings.
 5. Exterior concealed equipment and material locations and inverts with triangulated dimensions.

1.27 OPERATION AND MAINTENANCE MANUALS

- A. Prepare maintenance manuals in accordance with Division 1. In addition to the requirements specified in Division 1, include the following information for equipment items:
1. Written description of system operation.
 2. An equipment list for each piece of equipment furnished under this Contract. The list shall be in order of equipment tag number and shall indicate the manufacturer, model number, serial number, and motor horsepower and voltage ratings.
 3. Description of function, normal operating characteristics and limitations, performance curves, engineering data and tests, and complete nomenclature and commercial numbers of replacement parts.
 4. A copy of all final corrected equipment submittals, control diagrams, descriptive brochures, and a list of all parts of each piece of Mechanical and Electrical Equipment which has been furnished and installed. Manufacturer's printed operating procedures to include start-up, break-in, and routine and normal operating instructions; regulation, control, stopping, shutdown, and emergency instructions; and summer and winter operating instructions.

5. Maintenance procedures for routine preventative maintenance and troubleshooting; disassembly, repair, and reassembly; aligning and adjusting instructions.
 6. Servicing instructions and lubrication charts and schedules.
 7. Copies of all A.S.M.E. pressure vessel certifications, DEP approved tank permits, complete additional valve tag schedules, electrical inspection permits, and all additional mechanical and electrical permits required for occupancy by the Owner.
- B. All of the materials shall be indexed, arranged categorically, and be bound in a rigid, plastic covered, three ring binder. Provide tabs for each major section. Comply with Section 01730, Operations and Maintenance Data.
- C. The purpose of this manual is to assist the Owner in routine operation, maintenance, servicing, trouble shooting and procurement of replacement parts. All information in the manual shall be as-built and only material pertinent to the project shall be included.

1.28 OSHA STANDARDS

- A. The Contractor's attention is called to his sole responsibility in regards to the Occupational Safety and Health Administration Standards. All construction Work shall be performed in strict accordance with these Standards.
- B. The permanent installation shall meet the requirements of the OSHA Standards. All purchased equipment shall be designed, manufactured, and trimmed with the necessary accessories to meet or exceed the OSHA requirements. Any field constructed facilities - ladders, platforms, guard rails, safety features, and the like shall be as recommended in the OSHA Standards.
- C. No additional costs shall be charged to the Owner for Work required to meet OSHA regulations- Any discrepancy between these Drawings and Specifications and the OSHA Standards shall be brought to the attention of the Engineer for resolution before the Work is commenced.

PART 2 - PRODUCTS (included under Part 3 below)

PART 3 - EXECUTION

3.1 DOMESTIC WATER PIPING

- A. Underground Domestic Water Service Piping: Use the following piping materials for each size range:

1. NPS 2 and Smaller: Soft copper tube, Type K, copper pressure fittings; and soldered joints.
- B. Hot and Cold Potable Water Distribution shall be:
 1. Type 'L' copper, ASTM Spec, B-88-51 with a 150 psi working pressure. Exterior and/or underground piping shall be type 'K' copper. Fittings shall be wrought copper of weight corresponding to pipe to which they are attached. Joints shall be soldered using lead-free solder. Red brass screw pipe and fittings with chrome plating shall be used for all exposed fixture connections. Hanger spacing to be in compliance with the manufacturer's recommendations and the Plumbing Code.
- C. All piping shall be installed so as not to interfere with any ductwork or electric lighting outlets which must be accurately centered and located. This Contractor shall consult with the Electrical and HVAC Trades for exact locations of fixtures, conduit, equipment, and ductwork.
- D. Each branch from a main line shall be valved with a ball valve and each individual fixture shall be so valved that it can be readily shut off without interrupting the service to any other fixture.
- E. Keep fixture branches concealed, expose only as much as necessary for final connection. Where pipes are installed within 1-1/2" of the stud face protect with nail plate.
- F. Run piping on warm side of building insulation. Do not drop pipes in outside walls.

3.2 SANITARY AND STORM DRAINAGE SYSTEM

- A. Sanitary and vent lines shall be Schedule 40 polyvinylchloride (PVC) plastic pipe and fittings with solvent weld joints or service class, cast-iron soil piping with gasketed joints or hubless, cast-iron soil piping with heavy-duty, Type 304, stainless steel couplings. All plastic piping and fittings above grade shall be similar to PVC-DWV, Schedule 40 and conform to ASTM Specifications Designation D2665-76. Make all joints watertight and gastight under pressures required for various services as follows.
- B. All horizontal drainage piping shall be run in practical alignment and at a uniform pitch of 1/4" where possible, but in no case less than 1/8" per foot. Verify invert of line outside of building prior to beginning excavation.
- C. All changes in pipe size of drainage lines shall be made with reducing drainage fittings. All changes in direction shall be made by the appropriate use of long radius fittings, except that short turn tee-wye fittings may be used on vertical stacks.
- D. Provide a trapped connection to each piece of equipment requiring connection to the drainage system. Each piece of equipment shall be separately trapped by means of a water seal trap placed as close to the fixture as possible.

3.2 PIPE ACCESSORIES

- A. Pipe Sleeves - Install pipe sleeves wherever piping passes through fire rated walls, floors, ceilings, and structural members of the work. Where pipes penetrate fire rated assemblies seal around pipe with 3M's Fire Barrier Sealant, CP-25 caulk.
- B. Pipe Hangers - Horizontal runs of pipe shall be hung with approved heavy adjustable clevis type hangers spaced not more than 8 feet apart. Vertical pipes shall be supported at each floor utilizing two-bolt riser clamp or four-bolt riser clamp. All pipe hangers, hanger rod attachments, and anchors shall be manufactured products in accordance with MSS standards.

3.3 PIPE IDENTIFICATION

- A. Identify all domestic cold water, and domestic hot water piping with colored, waterproof, all temperature, self-adhering labels and directional arrows as manufactured by Seton. Identification labels shall be placed as follows:
 - 1. Near each valve and branch connection;
 - 2. Wherever piping emerges or disappears from view when viewed from the floor or the room in which it is installed;
 - 3. Labels shall not be more than 25 feet apart.
- B. Label all equipment such as pumps, furnaces, water heaters, etc with engraved plastic laminated signs.

3.4 EQUIPMENT LOCATIONS

- A. The Contractor shall apply for detailed and specific information regarding the location of all equipment before roughing-in. The final or required location may differ from that indicated on the drawings. Any piping or equipment improperly placed, because of the Contractor's failure to obtain this information, shall be removed, relocated and reinstalled by the Contractor without additional expense to the Owner.

3.5 PLUMBING FIXTURES

- A. Plumbing fixtures shall be complete with all required trim, including faucets, waste plugs, traps, tailpieces, supplies, stop valves, escutcheons, and casings and all necessary hangers, plates, brackets, anchors and supports.
- B. All fixtures shall be set straight and true. Install fixture materials and equipment in accordance with the manufacturer's written instructions, roughing-in drawings and/or as shown on the plans. Roughing for this work must be accurately laid out.

3.6 CALIBRATION AND ADJUSTMENT

- A. Adjust all flush valves, metering faucets, and all automatic and control devices to insure they work in accordance with these documents and the manufacturer's instructions. Insure that devices, piping and fixtures do not leak and adjust all fixture carriers for tightness and alignment.

3.7 TESTS

- A. Domestic Water Piping - After all piping has been installed, but before any equipment or fixtures have been connected, the system shall be filled with minimum pressure of 150 pounds per square inch. The pressure shall be maintained for a period of 60 minutes. After successful testing, flush all piping to remove dirt and foreign matter, then sterilize the water system with a Chlorine or HTH solution. Flush water pipes with fresh water to remove chlorine solution. Sterilization shall be performed in accordance with AWWA specifications C601-53T.
- B. Sanitary Piping - When roughing work is completed and before connection of fixtures or drains, the system shall be subjected to a water test by plugging up all openings and filling all of the lines to the roof level. Any defects shall be corrected.

3.8 DISINFECTION

- A. After flushing out all dirt and foreign matter, all pipelines for domestic water supply shall be sterilized as follows, with complete water analysis report furnished. Chlorine shall be applied as one of the following agents:
 - liquid chlorine gas-water mixture.
 - direct chlorine gas feed.
 - calcium hypochlorite.

3.9 INSULATION

- A. Insulate domestic hot, recirc, and cold water lines, all rain water pipes, and all fittings and valves. Pipe insulation shall be:
 - 1. Rigid fiberglass with white Kraft bonded to aluminum foil, $K = 0.23 @ 75 \text{ F.}$, reinforced with fiberglass yarn, suitable for painting, Manville Micro-Lok 650 with AP-T jacket or approved equal, (1" thick for pipes 1/2" to 2", 1-1/2" for pipes 2-1/2 to 4"). Fitting and valves shall be insulated with molded one-piece P.V.C. covers with fiberglass insulation, Manville Zeston 25/50' or equal. Covers on valves, strainers and fittings requiring service shall be removable pre-molded fittings. Covers shall overlap adjoining pipe insulation and jackets. Fitting covers shall be installed in accordance with the manufacturer's instructions utilizing factory precut insulation insert, cover and taping. Special attention shall be given to maintaining vapor barrier on cold water pipes. In cold

pipes where a vapor barrier is critical valve handle extensions shall be provided and all joints shall be sealed with a mastic. Seal ends of pipes where butt joined every 15'-0". Install insulation as instructed by the manufacturer.

2. Flexible Elastomeric: Closed-cell foam or expanded rubber tubular materials with both a moisture seal and a reinforced elastic foam PSA lap seal closure system complying with ASTM C 534, type 1, Grade 1. Acceptable Product: www.armacell.com Armacell LLC Model "Lap Seal".

3.10 VALVES

- A. Valves shall be as manufactured Nibco (or approved equivalents by Grinnell or Milwaukee). Shutoff valves shall be ball valves or butterfly type. Gate valves shall not be used. All valves are to be of one manufacturer. Valves to be lead-free construction.
- B. Provide shut-off valves where indicated and specified, and in following locations even if not indicated or specified:
 1. Risers and main branches at points of take-off from their supply or return mains.
 2. Individual equipment units at inlet and outlet, to permit removal of unit for repairs without interfering with remainder of systems.
- C. Locate valves for easy access and operation. Where valves are concealed provide access doors. Do not locate valves with stem below horizontal.
- D. Ball Valves shall be rated 150 psi SWP and 600 psi non-shock WOG and will have 2-pc. cast bronze bodies with full ports, TFE seats, standard port, separate packnut with adjustable stem packing, anti-blowout stems and chrome-plated brass/bronze ball. Valve ends shall have full depth ANSI threads or extended solder connections and be manufactured to comply with MSS-SP110. Acceptable valves: NIBCO T585-70 (threaded); S585-70 (solder)
- E. Check valves 2½" and smaller shall be Y-pattern swing-type manufactured in accordance with MSS-SP80, Class 125, bronze ASTM B-62 body with TFE seat disc. Where higher operating pressures approach 150 psi, Class 150 valves of like construction shall be used. Valve ends may be threaded or solder-type. Acceptable valves: Class 125 NIBCO T413-Y (threaded); S413-Y (solder); Class 150 NIBCO T433-Y (threaded); S433-Y (solder)

3.11 BALANCING VALVES

- A. Copper-Alloy Calibrated Balancing Valves
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Armstrong International, Inc.
 - b. Tour and Anderson

2. Type: Y-pattern globe valve with two readout ports and memory setting indicator.
3. Body: Brass or bronze
4. Size: Same as connected piping.
5. Accessories: Meter hoses, fittings, valves, differential pressure meter, and carrying case.

3.12 PIPE HANGERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.
 1. B-Line Systems, Inc.; a division of Cooper Industries.
 2. Empire Industries, Inc.
 3. ERICO/Michigan Hanger Co.
 4. MIRO Industries
 5. National Pipe Hanger Corporation.
- B. Description: MSS SP-58, Types 1 through 58, factory-fabricated components. Galvanized, Metallic Coatings: Pre-galvanized or hot dipped. All metal to be galvanized.
- C. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.
- D. Mechanical-Expansion Anchors: Insert-wedge-type zinc-coated steel, for use in hardened portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.
- E. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
 1. Adjustable, Galvanized Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated stationary pipes,
 2. Pipe Hangers (MSS Type 5): For suspension of pipes, NPS 1/2 to NPS 4, to allow off-center closure for hanger installation before pipe erection.
 3. Adjustable, Steel Band Hangers (MSS Type 7): For suspension of noninsulated stationary pipes, NPS 1/2 to NPS 8

4. Pipe Stanchion Saddles (MSS Type 37): For support of pipes, NPS 4 to NPS 8 with steel pipe base stanchion support and cast-iron floor flange and with U-bolt to retain pipe.
- F. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Sections, install the following types: Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers, NPS 3/4 to NPS 8.
- G. Steel Pipe Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from building structure.
- H. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, NPS 2-1/2 and larger and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.
- I. Install hangers for copper tubing with the following maximum horizontal spacing and minimum rod diameters:
 1. NPS 3/4 and Smaller: 60 inches with 3/8-inch rod.
 2. NPS 1 and NPS 1-1/4: 72 inches with 3/8-inch rod.
 3. NPS 1-1/2 and NPS 2: 96 inches with 3/8-inch rod.
- J. Install supports for vertical copper tubing every 10 feet.

3.13 MISCELLANEOUS PIPING SPECIALTIES

- A. Water Hammer Arresters: ASSE 1010 or PDI-WH 201, metal-bellows type with pressurized metal cushioning chamber. Sizes indicated are based on ASSE 1010 or PDI-WH 201, Sizes A through F.
 1. Available Manufacturers:
 - a. Josam Co.
 - b. Smith, Jay R. Mfg. Co.
 - c. Tyler Pipe; Wade Div.
 - d. Zurn Industries, Inc.; Specification Drainage Operation.
- B. Hose Bibbs: Bronze body with replaceable seat disc complying with ASME A112.18.1M for compression-type faucets. Include NPS 1/2 or NPS 3/4 threaded or solder-joint inlet, of design suitable for pressure of at least 125 psig; integral, nonremovable, drainable hose-connection vacuum breaker; and garden-hose threads complying with ASME B1.20.7 on outlet.
 1. Finish for Equipment Rooms: Rough bronze, or chrome or nickel plated.

2. Finish for Service Areas: Rough bronze.
 3. Finish for Finished Rooms: Chrome or nickel plated.
 4. Operation for Equipment Rooms: Wheel handle or operating key.
 5. Operation for Service Areas: Wheel handle.
 6. Operation for Finished Rooms: Operating key.
 7. Include operating key with each operating-key hose bibb.
 8. Include integral wall flange with each chrome- or nickel-plated hose bibb.
- C. Fixture Supply Valves: Supply kits shall include chrome plated brass stops with full turn brass stem, (no plastic) chrome plated copper risers and shallow bell brass flange. Inlet shall be ½ inch. Outlet shall be 3/8 inch. Supply kit shall be as manufactured by McGuire. Supply kit shall be certified by CSA or other recognized testing authority and bear manufacturer and testing mark. Stop to be certified to 200 psi line pressure.
- D. P-Traps: P-Traps shall be chrome plated cast brass body with cleanout, with 17 gauge seamless tubular wall bend, cast brass slip nuts. (No reducing washers), with shallow bell brass flange. P-Traps shall be equivalent to McGuire Premier Line. Traps shall be certified by CSA or other recognized testing authority and shall bear manufacturer and testing mark.
- E. Sink Insulation Kits: Seamless Pre-wrapped all cast brass ground joint swivel P-Trap kit furnished with McGuire cast brass ground joint swivel P-trap with cleanout, seamless supply riser tube covers, supply angle stop covers and angle stop wheel handle covers. Provide at all handicapped accessible sinks.

3.14 ROUGH-IN REQUIREMENTS

- A. Verify final locations for rough-ins with field measurements and with the requirements of the actual equipment to be connected.
- B. Refer to equipment specifications, drawings, or shop drawings rough-in requirements.

3.15 MECHANICAL INSTALLATIONS

- A. General: Sequence, coordinate, and integrate the various elements of mechanical systems, materials, and equipment. Comply with the following requirements:
 1. Coordinate mechanical systems, equipment, and materials installation with other building components.

2. Verify all dimensions by field measurements.
3. Arrange for chases, slots, and openings in other building components during progress of construction, to allow for mechanical installations.
4. Coordinate the installation of required supporting devices and sleeves to be set in poured-in-place concrete and other structural components, as they are constructed.
5. Sequence, coordinate, and integrate installations of mechanical materials and equipment for efficient flow of the Work. Give particular attention to large equipment requiring positioning prior to closing in the building.
6. Where mounting heights are not detailed or dimensioned, install systems, materials, and equipment to provide the maximum headroom possible.
7. Coordinate connection of mechanical systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies. Provide required connection for each service.
8. Install systems, materials, and equipment to conform with approved submittal data, including coordination drawings, to greatest extent possible. Conform to arrangements indicated by the Contract Documents, recognizing that portions of the Work are shown only in diagrammatic form. Where coordination requirements conflict with individual system requirements, refer conflict to the Architect.
9. Install systems, materials, and equipment level and plumb, parallel and perpendicular to other building systems and components, where installed exposed in finished spaces.
10. Install mechanical equipment to facilitate servicing, maintenance, and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations. Extend grease fittings to an accessible location.
11. Install access panel or doors where units are concealed behind finished surfaces.
12. Install systems, materials, and equipment giving right-of-way priority to systems required to be installed at a specified slope.

END OF SECTION 22 01 00

SECTION 23 01 00 - BASIC MECHANICAL REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes mechanical requirements and is intended to supplement information indicated on the Drawings.

1.2 DEFINITIONS

- A. The following definitions of terms and expressions used in mechanical and electrical sections are in addition to listing given in Supplementary General Conditions:
 - 1. Provide: shall mean "furnish and install".
 - 2. Install: shall mean installation of item.
 - 3. Furnish: shall mean procurement and delivery to jobsite of equipment for installation.
 - 4. Herein: shall mean the contents of a particular section where his term appears.
 - 5. Indicated: shall mean "indicated on contract drawings."
 - 6. Section shall mean one of the following portions of the project specifications
 - 7. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct shafts, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawl spaces, and tunnels.
 - 8. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.
 - 9. Exposed, Exterior Installations: Exposed to view outdoors, or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.
 - 10. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in duct shafts.
 - 11. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants, but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.
 - 12. Piping: includes in addition to pipe, also fittings, valves, hangers, and other accessories, which comprise a system.

13. Wiring: Conduit, fittings, wire, junction and outlet boxes, switches, cutouts, and receptacles and items necessary or required in connection with or relating to such wiring.
14. Trades: refers to those specifically skilled in the work performed under a particular section of this contract.
15. "General Contractor/G.C.": shall mean that contractor responsible for the work of Divisions 2 through 14 inclusive.
16. "Plumbing Contractor/P.C." shall mean the contractor or sub-contractor responsible for the Plumbing work described work in Division 22 that relate to the plumbing drawings. (Some general construction work may pertain to this work.)
17. "Mechanical Contractor/M.C." shall mean the contractor or sub-contractor responsible for the HVAC work described in Division 23 that relate to the mechanical drawings. (Some general construction work may pertain to this work.)
18. "Electrical Contractor/E.C." shall mean the contractor or sub-contractor responsible for the electrical work described in Division 26. (Some general construction work may pertain to this work.)

1.3 DRAWINGS

- A. Although the Mechanical Drawings are often sealed Drawings, they are also diagrammatic; i.e., not every piping elbow, hanger, etc. is shown that will be required for the actual installation. It shall be the responsibility of the Contractor to coordinate the actual installation of equipment, ductwork and piping with all other building system components, and shall provide all necessary offsets, transitions, etc. as required at no additional costs to this Contract.

1.4 TRUE INTENT

- A. The Drawings and Specifications are intended to provide a complete and perfectly operating system. Therefore, it is specifically agreed and understood by the Contractor that anything, be it labor, material or equipment, which is not described in the Specifications or specifically shown on the Drawings, but is necessary for the operation and completion of a properly operating system, according to the true intent of the Specifications and Drawings and as interpreted by the Architect, shall be furnished by the Contractor as a part of his Contract, at no extra charge, as though it were specifically detailed and described.
- B. Throughout the various specification sections and the drawings, material, equipment, and installation procedures are specified. The contractor shall coordinate between his or her own staff, subcontractors, and suppliers to provide complete and operational mechanical systems.

1.5 LINES, GRADES AND SURVEYS

- A. All necessary surveys, lines, grades, elevations, and measurements are the responsibility of the Contractor desiring the information for the proper installation of his work. The Contractor shall verify all lines, grades and dimensions as shown on the Drawings. The Contractor shall verify all lines and grades with the local controlling agency.
- B. Grades, elevations and locations shown on the Drawings are approximate and the Contractor shall check all such information on the site before proceeding with the work.

1.6 PERMITS, FEES AND CODES

- A. Nothing contained in this specification or shown on the drawings is intended to conflict with the codes, laws, ordinances, rules or regulations of Federal, State, or Local Municipal Governmental Authorities having jurisdiction over the premises, including N.J. Uniformed Construction Code, The International Mechanical Code, the National Electrical Code (NFPA 70-1990), and the Owners Insuring Agency. All such codes, laws, ordinances, rules and regulations are hereby incorporated and made a part of these specifications. Fixtures, appliances and equipment, which are subject to UL tests, shall bear such approval. All work performed on this project and all equipment furnished for this project shall be in conformance with the regulations and requirements of the Occupational Safety and Health Act (OSHA).
- B. Work shall be done in accordance with, but not limited to, the applicable sections of the latest edition and supplement to the following Codes and Standards:
 - 1. National electric Code, NFPA No. 70.
 - 2. NEMA Standard which pertain to motors, motor starter, control panels and wiring devices that are furnished as an integral part of items mechanical equipment.
 - 3. It shall be understood that the ANSI Standards and ASTM Specifications that are referred to in this Division are intended to be the current edition of each.

1.7 DAMAGE TO EXISTING CONDITIONS

- A. The contractor shall assume full responsibility for damage caused by them or their employees, or their sub-contractors to the building or building mechanical/electrical systems during the execution of this contract.
- B. Existing conditions shall be defined as portions of the building in place before renovations or new work that is in place.

1.8 METHOD OF PROCEDURE

- A. The Drawings accompanying these Specifications are diagrammatic and intended to indicate the approximate and relative locations of the Mechanical Systems. Installation, connection,

and inter-connection of all components of the Mechanical Systems shall be complete and made in accordance with the manufacturer's instructions and best practices of the respective trades.

1.9 MATERIALS AND EQUIPMENT

- A. All materials and Equipment shall be new, and shall conform to the grade, quality and standard specified here in.
- B. All Equipment offered under these Specifications shall be limited to products regularly produced and recommended for service, in accordance with engineering data, rating, or other comprehensive literature made available to the public and in effect at the time of opening of bids.
- C. Equipment shall be installed in strict accordance with manufacturer's instructions for type and capacity of each piece of equipment used. Contractors shall obtain the instructions which shall be considered part of these Specifications. Type, capacity and application of Equipment shall be suitable and shall operate satisfactorily for the purpose intended in the respective Mechanical Systems.
- D. Equipment shown on the Drawings illustrates the general space requirements and the Contractor shall install only such equipment which shall not necessitate changes in the building or arrangements. If changes are required due to substitution the Contractor shall pay ALL costs stemming from such change. No such changes shall be made except with Engineer's written approval.

1.10 ANCHOR BOLTS

- A. Contractor shall provide and set in place at the time bases are poured, all necessary anchor bolts as required for the various equipment specified herein, to be furnished by him under these Specifications. Anchor bolts must be of the hook type and of the proper sizes and length to suit the apparatus. The bolts shall be set in pipe sleeves of approximately twice the bolt diameter and as long as the imbedded length of the bolt.
- B. When the Equipment is set in its proper position, the bolt sleeves and the space between the rough foundations, bases or curbs of the Equipment shall be completely filled with one inch of non shrinking cement grout

1.11 RUBBISH REMOVAL AND CLEAN-UP

- A. Periodically, and at the completion of the work, the Contractor shall remove from the building and site all rubbish and accumulated materials whatever nature, and shall leave the work in a clean, orderly and acceptable condition. In addition, at the conclusion of the Project, before the work is deemed ready for final inspection, the Contractor shall clean all items of paint splashes, grease stains, dust, finger marks, and all other unsightly marks. The contractor shall provide dumpsters, trash containers, hauling and approved landfill dumping fees.

1.12 TESTS

- A. The following requirements are supplementary to test requirements specified for individual Equipment or systems in Mechanical Sections.
1. Written notice of date of test shall be given in ample time to all concerned.
 2. Concealed or insulated work shall remain uncovered until required tests have been completed. If construction schedule requires, arrange for prior test on parts of the system.
 3. As soon as conditions permit, conduct preliminary test of Equipment to ascertain compliance with specified requirements. Make needed changes, adjustments, or replacements as preliminary tests may indicate, prior to acceptance test.
 4. Conduct pressure, performance, and operating tests as specified or required for each system or equipment unit in presence of the Engineer, as well as representatives of agencies having jurisdiction.
 5. Contractor shall furnish labor, material, and instruments and shall bear all other costs in connection with tests.
 6. Obtain certificates of approval and/or acceptance in compliance with regulations of agencies having jurisdiction. Work shall not be deemed complete until such certificates have been delivered to the Owner.
 7. Contractor shall instruct representatives of Owner in all details of operation and maintenance of systems installed under these Contracts. Such instruction shall continue as long as necessary or as directed.
 8. Testing shall prove conclusively that all Mechanical Systems operate properly, efficiently, and quietly in accordance with the intent of the Drawings and Specifications.

1.13 PROTECTION

- A. Contractor shall effectively protect his work and materials with tarpaulin of heavy plastic material against dirt, water, chemicals, plaster or damage during the whole period of installation or until directed to remove the coverings by the Architect. Any damaged materials must be removed and replaced by the Contractor without additional cost regardless of the cause of the damage. All openings in pipes, fittings ductwork, conduit, etc., must be effectively sealed to exclude dirt, sand, and other foreign substances. All pipe trenches, tank pits, or similar excavation shall be maintained free of water at all times.

1.14 GUARANTEES AND WARRANTIES

- A. All work performed shall be guaranteed in writing by the Contractor for a period of one (1) year after substantial completion. The Contractor shall remedy any defects due to faulty materials or workmanship, and pay for any damage to other work resulting there from which shall appear within a period of one (1) year from date of occupancy by the Owner or the date of the Owner's Certificate of Final Payment of the total contract, and in accordance with the terms of any special guarantees provided in the Contract. The Owner shall give notice of observed defects with reasonable promptness. All questions arising under this article shall be decided by the Owner notwithstanding final payment.

1.15 CLEANING OF SYSTEMS

- A. The Contractors shall thoroughly clean all pipe and ductwork systems to remove all grease, oil, scale, rust, sand, and other foreign material after tests have been made and before the building is turned over to the Owner.
- B. All strainers shall be opened and cleaned thoroughly.
- C. The interior of all air handling equipment, ductwork and all filters shall be cleaned thoroughly before the building is accepted by the Owner.
- D. Should the Contractor put any substance into any system to aid in the cleaning of it, all traces of such material shall be removed before the system is considered clean. All such substances, if used, shall be free from any acid that will set or injure valve seats in any way.

1.16 INSTRUCTION TO OWNER

- A. At the completion of the work, and before final acceptance of the building by the Owner, each Contractor, together with the representatives of the manufacturers of the equipment installed by the Contractor, shall instruct the designated representatives of the Owner in the care, adjustment, maintenance and operation of equipment installed by him.
- B. A representative of the manufacturer of each piece of equipment shall inspect his respective pieces of equipment, make final adjustments, place them in a satisfactory working condition, and instruct the owner in their operation. Each representative shall also provide a letter to the Engineer indicating that an inspection has been performed, instruction given, and the equipment is installed and operating in conformance with the manufacturer's written installation instructions.

1.17 SUBSTITUTIONS

- A. Various items of equipment and materials that have been used as the basis for mechanical system design have been specified by a manufacturer's name and model number. Another manufacturer's product may be submitted for consideration as a substitute in accordance with the requirements set forth Division 1. The Architect/Engineer shall be the sole judge as to the comparability of an item of equipment that is submitted for approval as a substitute for that

which is specified. Each of the Contractor's substitute proposals shall include all labor and materials that will be required to install the equipment and make it operate satisfactorily in accordance with the original design concept. He shall include such things as changes in piping, valves, supports, fittings, ductwork, motors, controls, electrical wiring, and thermal insulation. It shall be the responsibility of the Contractor to make certain that substitute equipment, which has been accepted by the Architect/Engineer, will fit into the designated spaces. He shall make the necessary field measurements in order to determine that there is adequate space for the equipment, taking into consideration the clearances that are required for connections and servicing. He shall be responsible for any additional cost of other contractors resulting from the substitution.

1.18 COORDINATION DRAWINGS

- A. The Contractor shall use the construction documents or shall prepare their own coordination drawings, (at the contractor's option) to insure that the installation of all work is coordinated. If the construction documents are used, the contractors are responsible to insure that all work is coordinated regardless of how equipment and systems are shown on the drawings.
- B. Layout of plumbing, fire protection, mechanical, and electrical systems, equipment, fixtures, piping, ductwork, conduit, specialty items, and accessories indicated on the Contract Drawings is diagrammatic. Variations in alignment, elevation, and detail will be required to avoid interference and satisfy architectural and structural limitations are not necessarily shown.
- C. The Contractor and sub-Contractors shall work together to coordinate the installation of all equipment and material to be installed. If conflicts are found they shall be brought to the attention of the Architect.
- D. The Contractor and sub-Contractors shall, at a minimum, hold weekly coordination meetings during the construction process.

1.19 SUBMITTALS AND SHOP DRAWINGS

- A. General: Follow the procedures specified in Division 1 Section on "SUBMITTALS". The contractor shall submit a schedule of shop drawings to be submitted which shall indicate manufacturer, model, and date submittal will be delivered to the Engineer's office.
- B. Fax machine sheets or photocopies of same shall not be accepted as shop drawings.
- C. Shop Drawings and Equipment Submittals shall be submitted to and be approved by the Engineer before any Equipment is ordered or Work is accomplished. They shall clearly indicate the location, service and function of each particular item. Submittals shall be in the form of manufacturers printed catalogs, pamphlets, technical data, test information, and installation instructions. Identification shall be made in ink with specific model numbers highlighted and accessories highlighted. Shop Drawings and Submittals shall both be completely referenced and identified. Descriptive information and data in Submittals shall be complete. Those Drawings and Submittals which only show partial or general information will

not be acceptable and will be returned to the Contractor. Contractor shall inform the Engineer, in writing, of any deviations in the Shop Drawings and Submittals where such deviations are a departure from the Contract Documents. This written advisory shall, accompany the initial submittal and shall state the reasons for the deviations.

- D. Shop Drawings and Submittals which are prepared by the various Sub-Contractors and equipment suppliers shall first be sent to the Contractor for checking and eventual formal submission to the Engineer. Contractor shall check these drawings and submittals with respect to measurements, materials, identifications, and details so as to make certain that they conform to the intent of the Contract Documents. Drawings and Submittals which are found to be inaccurate or otherwise in error shall be returned by the Contractor to originating party for correction before submission to the Engineer.
- E. The Engineer shall check the Shop Drawings and Submittals to see if they conform with the design concept for this project and whether they comply with the information given in the Contract Documents. Approval of the shop drawing does not release the contractor from providing all specific requirements of the equipment and installation that may not have been listed on the shop drawing but were called for on the drawings or in the specifications. Contractor shall be responsible for dimensions that are to be confirmed at the job site for coordination in the ordering and assembly of Mechanical Equipment, for information that pertains solely to fabrication processes or to techniques of construction, and for coordination of the Work of all trades.
- F. The following specific items and information shall be included in all Shop Drawings and Submittals:
 - 1. Capacity and performance data as shown on the Equipment Schedules or as specified. Complete descriptive data on the Equipment so that compliance with the Specifications can be ascertained.
 - 2. Submittals for all valves, specialties, and miscellaneous items which are specified, scheduled, or shown.
 - 3. Electrical wiring diagrams (power and control) that show the complete control of electric motor driven equipment which is to be furnished by Division 22 & 23.
 - 4. Shop Drawings of ductwork. These Drawings shall be based on approved Architectural, Structural, and Mechanical Shop Drawings and Submittals which relate directly to the installation of the Mechanical Systems. Contractor shall also rely on job conditions, the Equipment that will be installed and actual field measurements where such measurements are vital to the preparations of his Drawings. The sheet metal shop Drawings shall clearly depict structural steel, grids, lights, sprinkler systems, and plumbing and HVAC piping mains in order to be able to more clearly ascertain and avoid interferences with structural steel, walls, and ceiling systems. Shop Drawing details shall clearly show the dimensions of the Equipment and the relationship of Equipment to walls, floors, and ceilings These Shop Drawings shall be prepared on at least 24" x 36" sheets at a minimum scale of 1/4" = 1'-0".

- G. Mechanical Systems and Equipment which have been installed without having been previously approved by the Engineer may be condemned by him. They shall be removed -if so condemned and be replaced with systems and Equipment that are approved. This Work shall be done with out additional cost to the Owner.
- H. Ductwork shall not be fabricated nor installed without approved Sheet Metal Shop Drawings.
- I. Shop Drawings and Equipment submittals shall be revised as often as may be necessary in obtaining the Engineer's approval. Only Equipment submittals and Shop Drawings for the installation of systems shall be used at the construction site which have Engineers stamp of approval. Contractor shall not install any equipment or materials in this Contract unless they have been previously approved by the Engineer. Contractor shall not delay the progress of the Work by resorting to unnecessary delays in resubmitting Shop Drawings or submittals for approval.
- J. When the Shop Drawings have been rejected or have been returned for additional information, no longer than 3 weeks shall elapse between receipt of returned material and the resubmittal of revised or new information.
- K. It is suggested that the Contractor obtain from his various Equipment suppliers, at the time that Shop Drawings and submittals are prepared, all of the information that will ultimately be required for the Operation and Maintenance Manuals.

1.20 AS-BUILT DRAWINGS

- A. Prepare and maintain record drawings and documents in accordance with the requirements in Division 1. In addition to the requirements specified in Division 1, indicate the following installed conditions:
 - 1. Ductwork mains and branches, size and location, for both exterior and interior; locations of dampers and other control devices; filters, boxes, and terminal units requiring periodic maintenance or repair.
 - 2. Mains and branches of piping systems, with valves and control devices located and numbered, concealed unions located, and with items requiring maintenance located (i.e., traps, strainers, expansion compensators, tanks, etc.). Valve location diagrams, complete with valve tag chart. Indicate valve number on as-built drawings. Indicate actual inverts and horizontal locations of underground piping.
 - 3. Equipment locations (exposed and concealed), dimensioned from prominent building lines.
 - 4. Approved substitutions, Contract Modifications, and actual equipment and materials installed.
 - 5. Contract Modifications, actual equipment and materials installed. Revise schedules on the drawings.

6. Exterior concealed equipment and material locations and inverts with triangulated dimensions.

1.21 OPERATION AND MAINTENANCE MANUALS

- A. Prepare maintenance manuals in accordance with Division 1. In addition to the requirements specified in Division 1, include the following information for equipment items:
 1. Written description of system operation.
 2. An equipment list for each piece of equipment furnished under this Contract. The list shall be in order of equipment tag number and shall indicate the manufacturer, model number, serial number, and motor horsepower and voltage ratings.
 3. Description of function, normal operating characteristics and limitations, performance curves, engineering data and tests, and complete nomenclature and commercial numbers of replacement parts.
 4. A copy of all final corrected equipment submittals, control diagrams, descriptive brochures, and a list of all parts of each piece of Mechanical and Electrical Equipment which has been furnished and installed. Manufacturer's printed operating procedures to include start-up, break-in, and routine and normal operating instructions; regulation, control, stopping, shutdown, and emergency instructions; and summer and winter operating instructions.
 5. Maintenance procedures for routine preventative maintenance and troubleshooting; disassembly, repair, and reassembly; aligning and adjusting instructions.
 6. Servicing instructions and lubrication charts and schedules.
- B. All of the materials shall be indexed, arranged categorically, and be bound in a rigid, plastic covered, three ring binder. Provide tabs for each major section. Comply with Section 01730, Operations and Maintenance Data.
- C. The purpose of this manual is to assist the Owner in routine operation, maintenance, servicing, trouble shooting and procurement of replacement parts. All information in the manual shall be as-built and only material pertinent to the project shall be included.

1.22 OSHA STANDARDS

- A. The Contractor's attention is called to his sole responsibility in regards to the Occupational Safety and Health Administration Standards. All construction Work shall be performed in strict accordance with these Standards.
- B. The permanent installation shall meet the requirements of the OSHA Standards. All purchased equipment shall be designed, manufactured, and trimmed with the necessary accessories to

meet or exceed the OSHA requirements. Any field constructed facilities - ladders, platforms, guard rails, safety features, and the like shall be as recommended in the OSHA Standards.

- C. No additional costs shall be charged to the Owner for Work required to meet OSHA regulations- Any discrepancy between these Drawings and Specifications and the OSHA Standards shall be brought to the attention of the Engineer for resolution before the Work is commenced.

1.23 TEMPORARY HEAT

- A. Requirements for providing temporary heat are stated in the General Conditions of the Specifications. New HVAC equipment furnished under this Contract may be used for temporary heat provided the following conditions are met:
 - 1. The HVAC equipment is installed as part of the permanent HVAC systems as indicated on the Drawings.
 - 2. The Contractor unconditionally extends the manufacturer's warranty one year from the date of final acceptance by the Owner.
 - 3. Air Handling systems, including air handlers and duct distribution systems are not to be utilized for temporary heat until interior construction is substantially complete as determined by the Engineer.
 - 4. All equipment and ductwork is cleaned to new condition.

PART 2 - PRODUCTS (included under Part 3 below)

PART 3 - EXECUTION

3.1 EQUIPMENT LOCATIONS

- A. The Contractor shall apply for detailed and specific information regarding the location of all equipment before roughing-in. The final or required location may differ from that indicated on the drawings. Any piping or equipment improperly placed, because of the Contractor's failure to obtain this information, shall be removed, relocated and reinstalled by the Contractor without additional expense to the Owner.

3.2 CALIBRATION AND ADJUSTMENT

- A. Adjust all flush valves, metering faucets, and all automatic and control devices to insure they work in accordance with these documents and the manufacturer's instructions. Insure that

devices, piping and fixtures do not leak and adjust all fixture carriers for tightness and alignment.

3.3 INSULATION

- A. Supply and return ductwork on the warm side of the building insulation does not require insulation.
- B. Intake air ductwork between the hood and HVAC unit shall be insulated.
- C. Exhaust ductwork between the hood and HVAC unit shall be insulated.
- D. Insulated with 1-1/2" thick, R-rated MicroLite fiberglass with FSKL aluminum vapor barrier, K=0.31 @75 F, Type 75, as manufactured by Manville. Tape all joints with 3" wide metal tape, pin and install as recommended by manufacturer. Ducts located in mechanical rooms shall be insulated with 2" thick rigid R-rated MicroLite fiberglass with FSKL aluminum vapor barrier, K=0.31 @75 F, as manufactured by Manville. Install insulation as instructed by the manufacturer.

3.4 DUCTWORK

- A. Furnish and install the size connections and runs of ducts as shown on the Plans. Sizes shown are net free area. The contractor shall consult with the Electric and Plumbing Trades and shall, in conjunction with the above contractors, establish the necessary space requirements for each trade. The ductwork shall, whether indicated or not, rise and/or drop and/or change in shape to clear any and all conduits, lighting fixtures, plumbing mains. Where ducts are run in ceiling spaces run as high as possible.
- B. The ductwork shall be continuous, shall be built in a strong, workmanlike manner with caulked joints and seams presenting a smooth surface on the inside and neatly finished on the outside. Ducts shall be constructed with the curves and bends so as to affect an easy flow of air. All elbows shall be round with turning vanes. Duct splitters shall be used where main ducts split. All branch ducts shall have a "Buckley Bellmouth" fitting or 45 deg entry tap. All transitions from one duct size to another shall have a maximum of 15 degree angle. Unless otherwise shown on the drawings, the inside radius of all curves and bends shall not be less than the width of ducts in plane of bend. All ducts shall be installed in accordance with International Mechanical Code, and SMACNA "HVAC Duct Construction Standards" Tables 1-3 through 1-19. All fitting shall be fabricated in accordance with Tables 2-1 through 2-10. All rectangular ductwork, unless otherwise noted, shall be built from heavily galvanized sheet steel and thoroughly braced and stiffened. All joints shall be caulked with an approved duct sealant.
- C. General: Fabricate ducts, elbows, transitions, offsets, branch connections, and other construction with galvanized, sheet steel, according to SMACNA's "HVAC Duct Construction Standards--Metal and Flexible." Comply with requirements for metal thickness, reinforcing types and intervals, tie-rod applications, and joint types and intervals.

1. Lengths: Fabricate rectangular ducts in lengths appropriate to reinforcement and rigidity class required for pressure classification.
 2. Materials: Free from visual imperfections such as pitting, seam marks, roller marks, stains, and discolorations.
- D. Static-Pressure Classifications: Unless otherwise indicated, construct ducts to the following:
1. Supply Ducts: 2-inch wg.
 2. Return Ducts: 2-inch wg, negative pressure.
 3. Exhaust Ducts: 2-inch wg, negative pressure.
- E. Cross Breaking or Cross Beading: Cross break or cross bead duct sides 19 inches and larger and 0.0359 inch thick or less, with more than 10 sq. ft. of unbraced panel area, unless ducts are lined.
- F. Ducts up to 24" width shall be suspended with 16 gauge, 1" wide galvanized strap hangers, ducts 25 thru 40" on a side shall be suspended by 1" wide by 1/8" thick galvanized strap hangers or trapeze hangers.
- G. Provide at each main branch take-off volume dampers operated by external quadrants with set screws to properly balance air flow.
- H. Flexible connectors shall be provided at each side of all air handling units and shall be composed of 10 ounce vinyl coated fiberglass and connected with 1/2" x 1/8" bolted metal bands.

3.5 FLEXIBLE AIR DUCTS

- A. Flexible air duct systems shall be Certaflex 25UL181, Class I air duct as manufactured by Certainteed. This is insulated round air duct with metallized mylar outside jacket enclosing 1-1/2" thick fiberglass insulation wrapped around continuous inner air barrier film reinforced with an encapsulated steel wire helix. Installation shall be in accordance with "Certainteed Fiberglass Duct Fabrication and Installation Manual" to include hangers and spacing. Maximum length of flexible air duct is 6'-0". Install only where shown on the drawings.

3.6 CONTROL DAMPERS

- A. Multiple blade design, low-leakage rating, and suitable for horizontal or vertical applications. Pressure Classifications of 3-inch wg or Higher: End bearings or other seals for ducts with axles, full length of damper blades and bearings at both ends of operating shaft. Acceptable Low Leak Control Damper: Greenheck Model VCD-33

3.7 TESTING OF HVAC SYSTEMS

- A. Contractor shall operate, test, and balance the heating, ventilating, and air conditioning systems and instruct the Owner's Representatives in their operation. Perform a series of general capacity and operating tests. The tests shall demonstrate the specified capacities of various pieces of equipment. The entire HVAC controls systems shall be adjusted and balanced and put in operating condition to cause the equipment to maintain the temperatures in accordance with the intent of these specifications. Operate and test equipment during summer and winter season startup under this contract. All air and hydronic balancing shall be done by a properly qualified mechanic, in presence of Owner's Representatives. Provide written balancing report in TABB, AABC or NEBB format to Engineer. T&B contractor to be NEBB, AABC, or NEBB certified.

3.8 ROUGH-IN REQUIREMENTS

- A. Verify final locations for rough-ins with field measurements and with the requirements of the actual equipment to be connected.
- B. Refer to equipment specifications, drawings, or shop drawings rough-in requirements.

3.9 MECHANICAL INSTALLATIONS

- A. General: Sequence, coordinate, and integrate the various elements of mechanical systems, materials, and equipment. Comply with the following requirements:
 - 1. Coordinate mechanical systems, equipment, and materials installation with other building components.
 - 2. Verify all dimensions by field measurements.
 - 3. Arrange for chases, slots, and openings in other building components during progress of construction, to allow for mechanical installations.
 - 4. Coordinate the installation of required supporting devices and sleeves to be set in poured-in-place concrete and other structural components, as they are constructed.
 - 5. Sequence, coordinate, and integrate installations of mechanical materials and equipment for efficient flow of the Work. Give particular attention to large equipment requiring positioning prior to closing in the building.
 - 6. Where mounting heights are not detailed or dimensioned, install systems, materials, and equipment to provide the maximum headroom possible.
 - 7. Coordinate connection of mechanical systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies. Provide required connection for each service.

8. Install systems, materials, and equipment to conform with approved submittal data, including coordination drawings, to greatest extent possible. Conform to arrangements indicated by the Contract Documents, recognizing that portions of the Work are shown only in diagrammatic form. Where coordination requirements conflict with individual system requirements, refer conflict to the Architect.
9. Install systems, materials, and equipment level and plumb, parallel and perpendicular to other building systems and components, where installed exposed in finished spaces.
10. Install mechanical equipment to facilitate servicing, maintenance, and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations. Extend grease fittings to an accessible location.
11. Install access panel or doors where units are concealed behind finished surfaces.
12. Install systems, materials, and equipment giving right-of-way priority to systems required to be installed at a specified slope.

3.10 AUTOMATIC TEMPERATURE CONTROLS

- A. The Contractor shall furnish and install a complete electronic-electric automatic temperature control (ATC) system as described herein and/or on the drawings. The control system shall combine self-contained temperature controls contained in the units with the control panels, sensor, and thermostats including control wiring between system components. Provide shop drawings with wiring diagrams, sequences of operation, and equipment data sheets. The supplier of the controls shall inspect the final installation and confirm that all systems are operating as intended and wired properly. A letter stating this shall be provided to the Owner. Once all systems are operating properly the Owner shall be instructed in the operation of the systems.
- B. Dampers: The Control Manufacturer shall furnish all automatic dampers not specified elsewhere in the specifications or drawings to be integral with air handling units. These dampers shall be opposed or parallel blade, of heavy gauge steel construction, tight shut-off type, with replaceable elastomer seals along the blade edges and damper frames. These dampers are standard size dampers, to be installed by the Contractor. Where the standard size dampers vary from the duct size or opening as shown on the Drawings, the Contractor shall furnish and install safing strips as required.
- C. Actuators: Actuators shall be as manufactured by Belimo. Electronic actuators used on valves or dampers shall be designed to directly couple and mount to a stem, shaft or ISO style-mounting pad. Actuator mounting clamps shall be a V-bolt with a toothed V-clamp creating a cold weld, positive grip effect. Single point, bolt, or single screw actuator type fastening techniques or direct-coupled actuators requiring field assembly of the universal clamp is not acceptable. Actuators shall be fully modulating/proportional, pulse width, floating/tri-state, or two position as required and be factory or field selectable. Actuators shall have visual position

indicators and shall operate in sequence with other devices if required. Optional auxiliary switches shall be available.

- D. Smoke Detectors: For units with air delivery capacity greater than or equal to 2000 CFM, a return duct smoke detector shall be provided. Provide with (2) additional contacts, (1) one normally open and (1) one normally closed, for connection by the Electrical Contractor. Normally open contact will be used by the E.C. to monitor loss of power to the sensor. Control wiring and power wiring shall be provided by the ATC Contractor. Upon sensing the products of combustion, the fan shall be de-energized, the outside air damper shall close. Install the detector in the return air duct. The duct mounted detector shall be similar to a System Sensor Model DH100ACDCP.
- E. Thermostats shall be Honeywell T7300 with Q7300 subbase, series 2000. The thermostat shall have the following features:
1. 7-day programming with 2 occupied and 2 unoccupied periods per day.
 2. LCD readout of time and temperature.
 3. Remote sensor.
 4. Maintains programmed times and temperatures in the event of a loss of power. .
 5. Concealed keyboard lockout switch and locking cover.
 6. 2 stage heating and 2 stage cooling.
 7. Continuous unoccupied key.
 8. Individual temperature setpoints for occupied heat and cool, unoccupied heat and cool.
 9. Intelligent fan operation.
 10. Contacts for control of fan and OA damper.
 11. Provide the thermostat wall-mounted remote sensor.
- F. SEQUENCE OF OPERATION
1. Heating Occupied: The AA supply air fan and exhaust air fan shall run continuously, the outside air and exhaust air dampers shall open, the bypass damper shall close. When space temperature drops below setpoint the electric heat shall be energized in stages. If heat is not needed the heat shall de-energize and the fans shall continue to run.
 2. Heating Unoccupied: The AA supply air fan and exhaust fan shall run on automatic cycle. The outside air damper and exhaust dampers shall close and the bypass damper

shall open. When space temperature drops below reduced unocc setpoint the electric heat shall be energized in stages.

END OF SECTION 23 01 00

SECTION 23 31 14 – PRE-MANUFACTURED EXTERIOR DUCTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Exterior Ductwork Systems

- B. Related Sections:

- 1. Division 23 Section "Metal & Nonmetal HVAC Ducts"
 - 2. Division 23 Section "Testing, Adjusting, and Balancing for HVAC" for testing, adjusting, and balancing requirements for metal ducts.
 - 3. Division 23 Section "Air Duct Accessories" for dampers, sound-control devices, duct-mounting access doors and panels, turning vanes, and flexible duct connections.
 - 4. Division 01 Section "Construction Waste Management"

1.3 DEFINITIONS

- A. Thermal Conductivity and Apparent Thermal Conductivity (k-value): As defined in ASTM C 168. In this section, these values are the result of the formula $[(\text{Btu}) \times (\text{in/hr}) \times (\text{sq. ft.}) \times (\text{deg F})]$ or $[(\text{W/m}) \times (\text{K})]$ at the temperature differences specified. Values expressed as Btu or W.

- 1. Example: Apparent Thermal Conductivity (k-value): 0.26 or 0.037.

1.4 WARRANTY

- 1. Total installed system shall carry a manufacturer's 10-year limited warranty.

1.5 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Duct hangers and supports shall withstand the effects of gravity loads and stresses within limits and under conditions described in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible"
- B. Fire & Smoke Performance
 - 1. The rigid phenolic insulation panels used in the fabrication of KoolTech ductwork and / or ductwork sections fabricated from the Kingspan KoolDuct System shall achieve the following fire and smoke performance requirements:
 - a. ASTM E 84-08a – unfaced or composite (insulation, facing and adhesive) of low contribution to fire growth not exceeding 25 Flame Spread and 50 Smoke Developed indices;
 - b. UL 723 – unfaced or composite (insulation, facing and adhesive) of low contribution to fire growth not exceeding 25 Flame Spread and 50 Smoke Developed indices
 - c. UL 181 – UL/ULC classification as a Class 1 Air Duct to NFPA Standards 90A & 90B.

1.6 SUBMITTALS

- A. Product Data: For each type of the following products:
 - 1. Ductwork, Fittings, Supports,
 - 2. Sealants and gaskets.
- B. Shop Drawings from manufacturer, drawn to a scale not smaller than 1/4" equals 1 foot, on drawing sheets same size as the Contract Drawings, detailing:
 - 1. Fabrication, assembly, and installation, including plans, elevations, sections, components, and attachments to other work.
 - 2. Factory- and shop-fabricated ducts and fittings.
 - 3. Indication of ductwork construction materials.
 - 4. Duct layout indicating sizes, configuration, liner material, and static-pressure classes.
 - 5. Elevation of top of ducts.
 - 6. Dimensions of main duct runs from building grid lines.
 - 7. Fittings.
 - 8. Reinforcement and spacing.

9. Seam and joint construction.
10. Penetrations through fire-rated and other partitions.
11. Equipment installation based on equipment being used on Project.
12. Locations for duct accessories, including dampers, turning vanes, and access doors and panels.
13. Hangers and supports, including methods for duct and building attachment, and vibration isolation.
14. Coordination with building structure and space available based on actual steel shop drawings.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver sealant materials to site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration period for use, pot life, curing time, and mixing instructions for multicomponent materials. Store and handle sealant materials according to manufacturer's written recommendations.
- B. Deliver and store all ductwork so it remains dry and free of any dirt or dust.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Exterior duct system shall be Dual-Tech system, by PTM Manufacturing, LLC. Newark, DE, 19713 302-455-9733. PTM design guidelines shall be strictly adhered too. Or equal by www.thermaduct.com/Outdoor-Duct, Or approved equal.

2.2 EXTERNAL DUCTWORK

- A. Exterior duct system shall be Dual-Tech system, by PTM Manufacturing, LLC. Newark, DE, 19713 302-455-9733. PTM design guidelines shall be strictly adhered too. Duct work shall be Double Wall Kingspan KoolDuct encased with PTM beaded and silicone sealed embossed.032Aluminum.
- B. Outdoor Ductwork Insulation:
 1. Material
 - a. Ductwork shall be double wall R8 (30mm) Kingspan KoolDuct. The panels used in the fabrication of Dual-Tech ductwork from the Kingspan KoolDuct System

shall be Kingspan KoolDuct rigid phenolic insulation panels of nominal dimensions 12.89 ft x 3.94 ft and minimum compressive strength 29 psi, as manufactured by Kingspan Insulation Ltd and detailed in App. A1

- b. Kingspan KoolDuct rigid phenolic insulation panels shall comprise a 3.4–3.75 pcf nominal density CFC/HCFC-free rigid phenolic insulation core with zero Ozone Depletion Potential (ODP), autohesively bonded on both sides to a 1 mil low vapor permeability aluminum foil facing reinforced with a 0.2” glass scrim.
- c. Kingspan KoolDuct rigid phenolic insulation panels are available in thicknesses of 1 3/16” (R-8.1 ft².hr.°F/Btu), as per design Thermal Requirements for double wall and a combined R16 thermal value.
- d. All other components required for the fabrication of ductwork from the Kingspan KoolDuct System including the silicone sealant, contact adhesive, aluminum tape, self-adhesive gasket, ductwork reinforcements, closures, connectors and flanges shall be as approved / supplied by Kingspan Insulation Ltd.
- e. Weather barrier shall be fabricated of mill finished embossed aluminum sheeting, 0.032” in thickness. Exposed seams to be covered with 1” butyl and a 8” embossed aluminum beaded bands, secured with #10 self-tapping, stainless screws with weather seal washers
- f. At weather barrier abutment locations, an industrial grade RTV silicone caulk shall be utilized, where applicable.
- g. Seams exposed to the weather shall be covered and sealed with a 1” wide by 1/8” thick butyl compound.
- h. All screws utilized to fasten panel system together shall be #10 x 1/2” self-tapping, stainless steel, weather seal washer screws.
- i. Contact cement or 2-sided adhesive tape shall be utilized for laminating insulation material to the weather barrier sheeting.
- j. Foil tape used for sealing the insulation edges shall be a minimum thickness of 1.25 mil.

C. Sealant Materials

1. All internal seams must be fully sealed with an unbroken layer of silicone sealant.
2. Each ductwork section must be duly connected with a jointing system approved Kingspan Insulation Ltd., and sufficient silicone sealant should be applied in order to seal the rigid phenolic insulation panel and ensure minimum air leakage.
3. Ductwork reinforcement, if necessary, shall be applied to protect against side deformation from both positive and negative pressure.

4. All external seams where two separate panels join must be taped to achieve a permanent bond and a smooth wrinkle free appearance.

D. Hangers & Supports

1. Building Attachments: Concrete inserts, powder-actuated fasteners, or structural-steel fasteners appropriate for construction materials to which hangers are being attached.
 - a. Use powder-actuated concrete fasteners for standard-weight aggregate concretes or for slabs more than 4 inches (100 mm) thick.
 - b. Exception: Do not use powder-actuated concrete fasteners for lightweight-aggregate concretes or for slabs less than 4 inches (100 mm) thick.
2. Hanger Materials: Galvanized sheet steel or threaded steel rod.
 - a. Hangers Installed in Corrosive Atmospheres: Electrogalvanized, all-thread rods or galvanized rods with threads painted with zinc-chromate primer after installation.
 - b. Strap and Rod Sizes: Comply with SMACNA's "HVAC Duct Construction Standards—Metal and Flexible" for steel sheet width and thickness and for steel rod diameters.
 - c. Galvanized-steel straps attached to aluminum ducts shall have contact surfaces painted with zinc-chromate primer.
3. Penetration into duct is not permitted.
4. Trapeze and Riser Supports: Steel shapes complying with ASTM A 36/A 36M.
 - a. Supports for Galvanized-Steel Ducts: Galvanized-steel shapes and plates.
 - b. Supports for Stainless-Steel Ducts: Stainless-steel support materials.
 - c. Supports for Aluminum Ducts: Aluminum support materials unless materials are electrolytically separated from ducts.

PART 3 - EXECUTION

3.1 CONSTRUCTION WASTE MANAGEMENT (LEED)

- A. The contractor, subcontractors, and their personnel shall follow the procedures and practices for waste separation, collection and transport as defined in the contractor's "Waste Management Plan" as required by Division 01 Section "Construction Waste Management."

3.2 FABRICATION

- A. Sizing: Panel system shall be sized in four overlapping sections to provide a complete seal surrounding KoolDuct ducting.
- B. Shall be laminated to the weather barrier and sized to allow for sufficient overlap as indicated in section 3.0 above. Second wall ducting shall be adhered utilizing appropriate contact method.

- C. Where feasible all general fabrication shall be performed in the shop and be based off of approved project drawing or direct field measurements.

3.3 INSTALLATION

- A. Ducting system sections shall be fitted into place and connected using aluminum flange and KoolDuct gasket as designed by Kingspan.
- B. Once fitted, joints will be covered with 1 3/16" (30mm) R8 KoolDuct with overlap seams and covered with an 5" beaded banding fabricated of mill finished embossed aluminum sheeting, 0.032" in thickness. Edges to be covered with 1" butyl. Embossed aluminum beaded bands, secured with #10 self tapping, stainless screws with weather seal washers.
- C. At weather barrier abutment locations, an industrial grade RTV silicone caulk shall be utilized, where applicable. Install ducts with fewest possible joints.

3.4 DUCT CLEANING

- A. Clean new duct system(s) before testing, adjusting, and balancing.

3.5 START UP

- A. Air Balance: Comply with requirements in Division 23 Section "Testing, Adjusting, and Balancing for HVAC."

3.6 DUCT SCHEDULE

- A. All exterior-mounted ductwork shall be manufactured with the system specified here within.

END OF SECTION 23 31 14

SECTION 26 01 00 - BASIC ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Sections and Division 1 Specifications Sections, apply to this section.

1.2 SUMMARY

- A. Furnish, install and connect completely operating systems in accordance with these specifications and the contract drawings. This shall include all required labor, materials, apparatus, supervision, testing, programming, training, and related work.
- B. Related Sections include the following:
 - 1. Division 01 Section "Construction Waste Management".

1.3 DEFINITIONS

- A. The following definitions of terms and expressions used in mechanical and electrical sections are in addition to listing given in Supplementary General Conditions:
 - 1. Provide: shall mean "furnish and install".
 - 2. Install: shall mean installation of item and all necessary wiring and/or programming to provide fully operational devices.
 - 3. Furnish: shall mean procurement and delivery to jobsite of equipment for installation.
 - 4. Replace: Shall mean remove and provide new.
 - 5. Herein: shall mean the contents of a particular section where this term appears.
 - 6. Indicated: shall mean "indicated on contract drawings."
 - 7. Section shall mean one of the following portions of the project specifications
 - 8. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe and duct shafts, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawl spaces, and tunnels.

9. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.
10. Exposed, Exterior Installations: Exposed to view outdoors, or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.
11. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in duct shafts.
12. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants, but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.
13. Listed or labeled: As defined in NFPA 70 Article 100, by a Testing Agency acceptable to Authorities Having Jurisdiction (AHJ) and marked for intended use.
14. Piping: includes in addition to pipe, also fittings, valves, hangers, and other accessories, which comprise a system.
15. Wiring: Conduit, fittings, wire, junction and outlet boxes, switches, cutouts, and receptacles and items necessary or required in connection with or relating to such wiring.
16. Trades: workers skilled in the work performed under a specific section of this contract.

1.4 DRAWINGS AND SPECIFICATIONS

- A. The Drawings are diagrammatic; i.e., not every conduit or box is shown that will be required for the actual installation. Coordinate the actual installation of equipment with all other building system components, and provide all necessary coordination, offsets, etc. as required to complete the work.
- B. The Drawings and Specifications are intended to describe a complete operating system. Provide all labor, material or equipment, which is not described in the Specifications or specifically shown on the Drawings, but is necessary for the operation and completion of a properly operating system, according to the true intent of the Specifications and Drawings and as interpreted by the Architect/Engineer.
- C. Throughout the various Drawings and Specifications, material, equipment, and installation procedures are specified. Separate specification sections are not intended to assign work. It is the Contractor's responsibility to assign work and insure that all work is provided and coordinated between all parties involved in the construction of the systems.

1.5 EXAMINATION OF THE BUILDING SITE

- A. Should any discrepancies occur between existing conditions and drawings and specifications, they shall be immediately reported to the Architect/Engineer for clarification before bids are submitted.

1.6 PERMITS, FEES AND CODES

- A. Nothing contained in this specification or shown on the drawings is intended to conflict with the codes, laws, ordinances, rules or regulations of Federal, State, or Municipal Authorities Having Jurisdiction (AHJ), and the Owners Insuring Agency where applicable. All such codes, laws, ordinances, rules and regulations are hereby incorporated and made a part of these specifications.
- B. Work shall be done in accordance with, but not limited to, the applicable sections of the latest edition and supplement to the following Codes and Standards
 - 1. ANSI American National Standard Institute
 - 2. ASTM American Society for Testing and Materials
 - 3. IEEE Institute of Electrical and Electronics Engineers
 - 4. NEMA National Electrical Manufacturers Association
 - 5. NFPA National Fire Protection Association
 - 6. NEC National Electric Code
 - 7. IBC International Building Code
 - 8. All relevant sub-codes under the PA UCC.
- C. OSHA: All work performed and all equipment furnished for this project shall be in conformance with the regulations and requirements of the Occupational Safety and Health Act (OSHA).

1.7 DAMAGE TO EXISTING CONDITIONS

- A. The Contractor shall assume full responsibility for damages caused by employees or sub-contractors during the execution of this contract.
- B. Fireproofing: Portions of the building's structural steel may be protected with fireproofing. The Contractor shall install supports, equipment, attachments, etc. to the steel with minimal disruption to existing fireproofing material. Where fireproofing material is removed or disturbed, it shall be patched and repaired using equivalent materials to maintain protection of the structure to the satisfaction of the Architect/Engineer.

1.8 MATERIALS AND EQUIPMENT

- A. All materials and equipment shall be new, and shall conform to the grade, quality and standard specified herein. Major items of equipment shall be the best grade and quality used for the purpose in commercial practice and shall have the manufacturer's name, address and catalog number on a plate securely affixed in a prominent place. All electrical equipment or apparatus of any one system must be the product of one manufacturer or equivalent products of a number of manufacturers, which are suitable for use in a unified system.
- B. Equipment shall be installed in strict accordance with manufacturer's instructions for type and capacity of each piece of equipment used. Type, capacity and application of equipment shall be suitable for, and shall operate satisfactorily, for the purpose intended.
- C. Electrical materials and equipment which is subject to UL tests shall bear such approval, or from an equivalent third-party agency approved by the local AHJ.
- D. Equipment shown on the Drawings illustrates the general space requirements. Install equipment which will fit in the space provided and which will not require changes in the building or equipment arrangements. If changes are required due to substitution the Contractor shall pay all costs stemming from such change. No such changes shall be made except with Architect/Engineer's written approval.

1.9 CUTTING AND PATCHING

- A. Perform cutting and patching of existing building surfaces as required for the installation of new systems, or for removal of demolished work, except where otherwise noted. All cutting shall be carefully performed in a manner approved by the Architect/Engineer and all patching shall be done to match the existing material and finish.
- B. All cutting and patching shall be done by tradesmen experienced in the required type of work. Any damage incidental to cutting or other causes in the performance of this Contract shall be repaired.

1.10 TESTS

- A. The following requirements are supplementary to test requirements specified for individual equipment or systems in other Sections.
 - 1. Written notice of date of test shall be given in ample time to all concerned.
 - 2. Concealed work shall remain uncovered until required tests have been completed. If construction schedule requires, arrange for tests on parts of the system.
 - 3. As soon as conditions permit, conduct preliminary test of Equipment to ascertain compliance with specified requirements. Make needed changes, adjustments, or replacements as preliminary tests may indicate, prior to acceptance test.

4. Conduct performance and operating tests as specified or required for each system or equipment unit in presence of the Architect/Engineer, as well as representatives of the Owner and AHJ.
5. Furnish labor, material, and instruments and bear all other costs in connection with tests.
6. Obtain certificates of approval and/or acceptance in compliance with regulations of AHJ. Work shall not be deemed complete until such certificates have been delivered to the Owner.
7. Testing shall prove conclusively that all electrical systems operate properly, efficiently, and in accordance with the intent of the drawings and specifications.
8. Instruct representatives of Owner in all details of operation and maintenance of systems installed under the Contract. Such instruction shall continue as long as necessary or as directed.

1.11 PROTECTION

- A. Protect work and materials against dirt, water, chemicals, plaster or damage during the whole period of installation or until directed to remove the coverings by the Architect/Engineer. Any damaged materials must be removed and replaced. All openings in cabinets, fittings, conduit, etc., must be effectively sealed to exclude dirt, sand, and other foreign substances. All trenches, vaults, manholes, or similar excavation shall be maintained free of water at all times.
- B. All surfaces, either finished or in preparation for finishing, shall be protected against damage from welding, cutting, burning, soldering or similar construction functions. Special care shall be directed to exposed finished masonry, metal or wood surfaces and painted surfaces. Corrective measure required shall be accomplished by the trade which made the original installation and when as directed by the Architect/Engineer at the expense of the Contractor causing the damage.

1.12 PERFORMANCE OF EQUIPMENT

- A. All materials, equipment and appurtenances of any kind, shown on the drawings, hereinafter specified or required for the completion of the work in accordance with the intent of these specifications, shall be complete and acceptable in operation, performance, and capacity. No approval, either written or verbal, of any drawings, descriptive data of samples of such material, equipment and/or appurtenances, shall relieve the Contractor of his responsibility to turn over the same to the Owner in perfect working order at the completion of the work.
- B. Any material, equipment, or appurtenances which does not comply with the drawings and/or specification requirements, or which is not new, or which is damaged prior to acceptance by the Owner, will be held to be defective material and shall be removed and replaced with proper acceptable materials.

- C. All equipment and systems shall be furnished by manufacturers who have been regularly engaged in the manufacture of these products. Submit, prior to final payment, a statement from the manufacturer or his authorized representative, certifying that the equipment has been inspected and is properly installed and functioning satisfactorily. Final connections and testing of such systems shall be made under the direct supervision of authorized service technicians in the employ of the respective manufacturer.

1.13 QUALITY OF WORKMANSHIP

- A. All work shall be installed in a first class, neat and workmanlike manner by mechanics skilled in the trade involved. The quality of workmanship shall be subject to the approval of the Architect/Engineer. Any work found to be of inferior quality and/or workmanship shall be replaced and/or reworked.

1.14 SUBSTITUTIONS

- A. Various items of equipment and materials used as the basis for design are specified by a manufacturer's name and model number. Other products may be submitted for consideration as a substitute in accordance with the requirements set forth in Division 1. The Architect / Engineer shall be the sole judge as to the acceptability of equipment that is submitted as a substitute. Each substitution proposal shall include all labor and materials that will be required to install the equipment in accordance with the original design concept. Prior to submitting, verify that substitute equipment will fit into the designated spaces. Make the necessary field measurements in order to determine that there is adequate space for the equipment, taking into consideration the clearances that are required for code compliance, connections and servicing.

1.15 SUBMITTALS AND SHOP DRAWINGS

- A. General: Follow the procedures specified in Division 1 "SUBMITTALS". Submit a schedule of shop drawings which shall indicate manufacturer, model, and date each submittal will be delivered to the Architect/Engineer's office.
- B. Shop Drawings and Equipment Submittals shall be submitted to and be approved by the Architect/Engineer before any equipment is ordered or work is accomplished. Submittals shall clearly indicate the location, service and function of each particular item, and shall be in the form of manufacturers printed catalog sheets including technical data, test information, and installation instructions with specific model numbers and options or accessories highlighted. Submittals which only show partial or general information will not be acceptable and will be returned.
- C. Inform the Architect/Engineer, in writing, of any deviations in Submittals where such deviations are a departure from the Contract Documents. This written advisory shall accompany the initial submittal and shall state the reasons for the deviations.

- D. The Architect/Engineer will check Submittals for conformance with the design concept and the Contract Documents. Acceptance of the shop drawing does not release the Contractor from providing all specific requirements of the equipment and installation as specified in the documents. Contractor shall be responsible for dimensions that are to be confirmed at the job site for coordination in the ordering and assembly of equipment, for information that pertains solely to fabrication processes or to techniques of construction, and for coordination of the Work of all trades.

1.16 COORDINATION DRAWINGS

- A. The various contractors shall coordinate all work using the construction documents, or shall prepare their own coordination drawings, to insure that the installation of all work is coordinated. If the construction documents are used, insure that all work is coordinated regardless of how equipment and systems are shown on the drawings.
- B. Layout of plumbing, fire protection, mechanical, and electrical systems, equipment, fixtures, piping, ductwork, conduit, specialty items, and accessories indicated on the Contract Drawings is diagrammatic. Variations in alignment, elevation, and detail will be required to avoid interference and satisfy architectural and structural limitations are not necessarily shown.

1.17 COORDINATION AND ALIGNMENT

- A. Where several devices, panels, controllers, disconnects, switches, etc., are to be installed in a common location, devices shall be grouped and aligned in a horizontal and/or vertical plane.
- B. All locations are subject to changes that may be necessary to avoid obstacles in building construction. The Contractor shall verify all dimensions and conditions at the site, and he shall check the layout for sizes and clearances, to be sure that the apparatus and materials he proposes to furnish may be installed and operated satisfactorily in the space shown. Equipment and raceways shall be installed to preserve headroom and to keep openings and passageways clear. Equipment, boxes and outlets shall be installed in accessible locations. The Contractor shall examine drawings of other trades and avoid interference with their work.

1.18 OPERATION AND MAINTENANCE MANUALS

- A. Prepare maintenance manuals in accordance with Division 1 requirements. In addition to those requirements, include the following information:
 - 1. Written description of system operation.
 - 2. A list of each piece of equipment furnished under this Contract. The list shall indicate the manufacturer, model number, serial number, and motor horsepower and voltage ratings.

3. Description of function, normal operating characteristics and limitations, performance curves, engineering data and tests, and complete nomenclature and commercial numbers of replacement parts.
 4. A copy of all final corrected equipment submittals, control diagrams, descriptive brochures, and a list of all parts of each piece of equipment which has been installed. Manufacturer's printed operating procedures to include start-up, break-in, and routine and normal operating instructions; regulation, control, stopping, shutdown, and emergency instructions; and summer and winter operating instructions.
 5. Maintenance procedures for routine preventative maintenance and troubleshooting; disassembly, repair, and reassembly; aligning and adjusting instructions.
 6. Copies of all permits, inspections, and startup tests and service required and obtained.
- B. All of the materials shall be indexed, arranged categorically, and be bound in a rigid, plastic covered, three ring binder. Provide tabs for each major section.
- C. The purpose of this manual is to assist the Owner in routine operation, maintenance, servicing, trouble shooting and procurement of replacement parts. All information in the manual shall be as-built and only material pertinent to the project shall be included.

1.19 RECORD DRAWINGS

- A. Prepare and maintain record drawings and documents in accordance with the requirements in Division 1. Submit one set of red-marked prints with all installed conditions clearly noted.

1.20 TRAINING AND INSTRUCTIONS

- A. At the completion of the work, and before final acceptance, the Contractor, together with the representatives of the manufacturers of the major equipment installed, shall instruct the designated representatives of the Owner in the care, adjustment, maintenance and operation of installed equipment or systems.
- B. A representative of the equipment manufacturer shall inspect his equipment, make final adjustments, place them in a satisfactory working condition, and instruct the owner in their operation. Provide certification to the Architect/Engineer indicating that an inspection has been performed, instructions given, and the equipment is installed and operating in conformance with the manufacturer's written installation instructions.

1.21 TEMPORARY UTILITIES

- A. Provide temporary facilities and services in accordance with Division 1 and Division 26. The existing facilities may be used for construction power to the limit of their capacities.

- B. The Owner will pay for cost of electricity for all temporary power utilized in the new construction.
- C. Provide the following work in addition to any temporary services and facilities described elsewhere in specifications.
 - 1. Temporary electric service for construction power and lighting.
 - 2. Temporary construction power outlets and lighting.
 - 3. Construction lighting and power shall meet minimum NEC and OSHA requirements.
 - 4. All construction outlets shall be ground fault interrupted protected in compliance with any OSHA regulations.
 - 5. Remove all temporary construction power wiring, fixtures, etc, when no longer required.

PART 2 - PRODUCTS

2.1 CONDUIT AND CABLE

- A. Rigid galvanized conduit (RGS): Schedule 40 rigid galvanized steel with threaded fittings shall be used where required by code, where installed in or through structural concrete, in outdoor locations, and in other locations specified on the drawings.
- B. Electrical metallic tubing (EMT): Galvanized steel tubing with compression or set-screw fittings shall be used for interior work except below slabs on grade or where subject to physical damage, corrosion or vibration. EMT shall be used for exposed interior locations in unfinished spaces and where run exposed along exposed roof structure.
- C. Metal-clad type 'MC': 'MC' cable utilizing insulated copper conductors and which includes a ground conductor shall be permitted in lieu of conduit and conductors where installed concealed in walls or above ceilings, and where approved by NEC. 'MC' shall not be run exposed (surface mounted) on walls. 'MC' cables shall not be used where run exposed at roof structure, except for short runouts to lighting fixtures or equipment connections. Connectors for 'MC' cable shall be approved insulating type.
- D. PVC conduit: Rigid non-metallic conduit (RNC), schedule 40 or 80 PVC with matching fittings shall be used underground or under-slab. PVC conduit fittings shall use socket-type solvent joints made with manufacturer's recommended solvent.
- E. Flexible metal conduit: shall be used in interior dry locations for connections to mechanical equipment that is subject to vibration or may require movement or adjustment, for transformer connections, for use where structural conditions prohibit rigid conduit, and for installation within existing hollow walls.

- F. Liquid tight flexible metal conduit with approved sealing connectors and continuous copper ground, properly bonded, shall be used for connections to outdoor equipment. Anaconda Sealite Type UA or approved equal.
- G. Conduit connectors, couplings, and fittings shall be cast aluminum or zinc plated steel with the proper size and number of threaded hubs for conduits. Conduit terminals shall be provided with locknuts and insulating bushings, or a steel bushing with insulating ring. Fittings shall be of the same material as the conduit used and approved for the application.
- H. Conduits shall be supported by galvanized clamps or hangers supported on rods or directly attached to the structure. Supports shall be not more than 8 feet apart. Fastenings in masonry shall be lead anchors or toggle bolts and in solid concrete shall be lead anchors or inserts. Fastenings to steel shall be by means of beam clamps, angle clips welded in place, or approved equal method. Groups of conduits and groups of switches, starters and apparatus shall be supported on channel type steel framing, bolted together and braced to form a rigid structure.

2.2 PULL BOXES AND JUNCTION BOXES

- A. Pull or junction boxes shall be of zinc coated sheet steel. Boxes exposed to moisture shall be hot-dip galvanized after fabrication. Box dimensions shall be not less than required by the NEC or as shown on the plans, and large enough to accommodate wiring without sharp bends in the conductors or excessive bearing of the wires against the cover or bushings.
- B. Pull boxes shall be provided where shown on the drawings, where required to facilitate the installation of conductors, or to limit each conduit run to three right angle bends or their equivalent. Remove box knockouts only where openings are used. Pull boxes shall not be exposed in finished rooms unless specifically shown on the drawings.

2.3 OUTLET BOXES

- A. Outlet boxes shall be zinc coated pressed steel not less than 4 inches square or octagonal and 1-1/2 inches deep, with appropriate covers. Larger sizes, and square type, shall be furnished where 1-inch conduits are used, and where required to meet the NEC
- B. Outlet boxes for wall outlets in exposed block or tile walls shall have 1-1/2 inch deep covers with square corners, similar to Steel City No. 52-C-5, to permit block or tile to fit closely to the box. In lieu of tile covers, masonry boxes similar to Raco No. 695 may be used.
- C. Outlet boxes shall be provided with the proper size knockouts for the conduits to be used, and all unused knockouts must remain closed. Boxes to which fixtures are to be attached shall be fitted with 3/8 inch fixture studs, of a type which does not depend on machine screws to support the fixtures.
- D. For exposed conduit or tubing, wall boxes shall be FS or FD fittings, except that utility boxes may be used for single wiring devices. For conduit exposed to weather or moisture, and where

vaportight construction is required, suitable threaded fittings shall be used for all outlets, and at all junction points.

2.4 CONDUCTORS

- A. Copper conductors shall be soft drawn copper wire with 600 volt dual-rated THWN/THHN-2 insulation, unless otherwise noted. Minimum size shall be No. 12 AWG. Provide neutral conductor of same size as phase conductors unless otherwise noted.
 - 1. Conductors shall be rated for 90 degrees C., wet or dry.
 - 2. Conductors No. 8 AWG and smaller shall be single conductor, conductors larger than No. 8 AWG shall be stranded.
- B. No wire shall be installed in conduits until all conduit work is completed and the building is closed, to avoid water entering the conduits. Conduits in floors, where moisture may be trapped, shall be swabbed out prior to the installation of wires.
- C. Color code all wires for phase identification. Use colored bands of tape on exposed ends of conductor insulation to identify conductors not otherwise color coded.
- D. Connections of No. 10 AWG and smaller wires to switches, receptacles and panelboards may be of the clamp or screw type. For larger sizes, solderless lugs shall be used. Splices for four No. 10 AWG wires or less shall be Scotchlok Spring Type or Ideal Wingnut.
- E. Terminations and splices for conductors larger than No. 10 AWG shall be of the compression type made with a compression tool and die recommended by the manufacturer.
- F. Splices shall be thoroughly cleaned, made mechanically and electrically secure and wrapped with rubber and friction tape. Four layers of half-lapped vinyl plastic tape will be acceptable subject to the approval of local AHJ. Scotchlok type S,M,L and D and Ideal Wingnuts 451, 452 and 453 will be approved. Wire nuts will not be approved. Use split bolt connectors for larger wires.

2.5 GROUNDING AND BONDING

- A. All equipment, conduit and raceway systems, and associated work shall be grounded in accordance with NEC and to the approval of local AHJ. Provide equipment grounding conductor in each conduit.
- B. Provide a grounding electrode system, including ground rods, ground cables, connectors and lugs, as shown on the drawings and specified herein. All main ground conductors shall be bare stranded copper. All exterior connections and splices shall be made with the Cadweld or equal process.

2.6 WIRING DEVICES

- A. General: Refer to wiring devices specified on the Drawings.
- B. Receptacles: Duplex receptacles shall be nylon body, specification grade grounding type, rated 20 amperes, 125 volts.
 - 1. Provide tamper-resistant, weather-resistant, ground-fault, or other specialty type as indicated.
- C. Light switches: switches shall be nylon body specification grade, SPST or DPST, rated 20 amp, 120/277 volt with steel grounding screw and clip.
- D. Color of all devices within the same room shall match and shall be ivory or white in finished areas, and brown in unfinished (equipment) rooms, as selected by Architect/Engineer.
- E. Device plates:
 - 1. High-impact specification grade nylon cover plates with matching screws shall be used in all areas. Color shall match device body.
 - 2. Provide single and multiple gang wall plates as required.

2.7 LUMINAIRES, BALLASTS AND LAMPS

- A. Provide fixtures as scheduled on the drawings. Provide lamps in each fixture as listed in the schedule. Provide spare lamps as specified. Verify the exact ceiling type and construction before ordering fixtures.
- B. Install lighting fixtures where shown on the drawings. Minor deviations will be allowed to obtain symmetry or to avoid obstructions. Fixtures to be mounted in an approved manner with proper regard to structural support, light leakage and accessibility. Provide support of each fixture, including lay-in fixtures in grid ceilings. Fixtures shall be cleaned before lamping.

2.8 SAFETY SWITCHES

- A. Safety switches shall be fusible or no-fusible, as indicated or required, horsepower rated, quick-make and quick-break with interlocked cover, plated contact surfaces, auxiliary clamping means for fuse holders and provisions for padlocking, in accordance with NEMA standards for Heavy-Duty Type HD switches. Enclosures shall be NEMA-1, except those exposed to the weather shall be NEMA-3R.
- B. Manual Motor Starters:
 - 1. Provide pilot lights and extra positions for multi-speed motors.

2. Provide overload protection: melting alloy type thermal overload relays.
3. Manual motor starter shall be Square D Class 2510 or equal.

2.9 PANELBOARDS

A. Provide circuit breaker panelboards as indicated and scheduled.

1. NEMA PB1: Type, capacity, ratings, and number of poles as indicated or scheduled.
2. Indoor Type 1 surface mount enclosures shall have a flush front with finish to be gray baked enamel. Outdoor Type 3R enclosures shall be provided where indicated.
3. Provide a directory label with circuits identified as installed.

B. Circuit Breakers

1. Circuit breakers shall be thermal magnetic trip, with an integral crossbar to ensure simultaneous opening of all poles in multi-pole circuit breakers.
2. Circuit breakers shall have an over center, trip-free, toggle-type operating mechanism with quick-make, quick-break action and positive handle indication.
3. Handles shall have ON, OFF, and "Tripped" positions. In addition, trip indication shall include a VISI-TRIP indicator appearing in the window of the circuit breaker case (through 125 amperes).
4. Circuit breakers shall be UL Listed in accordance with UL standard 489 with current ratings as noted on the plans. Interrupting ratings shall be selected to provide the required short circuit current rating.
5. Provide circuit breaker types as required or indicated:
 - a. SWD circuit breakers intended to switch fluorescent listing loads
 - b. HACR circuit breakers intended for use with air-conditioning, heating, and refrigeration equipment
 - c. UL Class A ground fault interrupter circuit breakers where scheduled on drawings.

2.10 SLEEVES , SEALS, AND PENETRATIONS

- ### A. Wall, Floor and Roof Penetrations: Provide sleeves and seals, of types, sizes and materials indicated. Coordinate all work, including locations, placement, and scheduling, with the General Contractor. Provide sleeves with the following construction features:

1. Exterior Wall Sleeves: Provide sleeve or cored opening as indicated below and seal annular space with waterproof sealant.
 - a. In existing solid masonry or concrete walls; Core drill opening with inside diameter 1/4 inch larger than conduit OD.
 - b. In new construction or existing hollow cavity exterior walls; Provide sleeves of galvanized steel schedule 40 pipe cut 1/4 inch short of interior and exterior surfaces, inside diameter 1/4 inch larger than conduit OD. Furnish sleeves to general Contractor for placement in wall construction
2. Interior Wall Sleeves: Sleeves through hollow partitions, gypsum board surfaces, and suspended ceilings shall be EMT conduit Provide sleeves where required to protect cabling or conduit penetrations through building construction. Each sleeve shall extend through its respective floor, wall, or partition and shall be cut flush with each surface unless otherwise required. All sleeves shall be properly installed and secured in place.
3. Roof Penetrations: For electrical conduit/wiring to serve equipment on roof, make penetrations through equipment curbs or vertical surfaces wherever possible. Where penetration through horizontal roof surface is required, provide galvanized steel sleeve through roof deck, anchored to deck, and sized to allow conduit to pass through. Provide EPDM roof flashing boot with conduit clamp flashed into EPDM roofing, or pitch pocket flashing assembly for built-up roofing surface. Flashing work shall be performed by an authorized roofer or by General Contractor if so indicated.
4. Floor Sleeves: Galvanized steel pipe with smooth edges shall extend 1 inch above and below the finished floor. Sleeve shall provide 1/2" space between floor sleeves and passing conduit or cables and shall include fireproof sealant where required. Where conduits pass through waterproofed floors or walls, sleeves shall include a waterstop flange and shall be such that waterproofing can be flashed into and around the sleeves. Furnish sleeves to General Contractor for placement in floor construction prior to concrete placement.

2.11 SEALANTS

- A. Elastomeric Joint Sealers: Seal all penetrations in exterior construction. One-part, nonacid-curing, silicone sealant complying with ASTM C 920, Type S, Grade NS, Class 25, color to match adjacent surface. Provide backer material as required. Dow Corning 790 or equal.
- B. Fire Sealant: Seal all openings and penetrations in fire rated floors, ceilings or partitions. The firestop material shall have a fire rating equal to or greater than the rating of the floor, ceiling or partition material. All firestop material shall be U.L. (or equal) listed for the application.
 1. Verify extent of fire rated floors and walls; refer to architectural drawings, or match to existing conditions. As a minimum, apply fire sealant at all penetrations of floors, stairwells, corridor walls, storage rooms, boiler and electrical rooms, elevator shafts, and

other hazardous rooms. Rooms with walls that stop below the deck above, or which are not otherwise constructed to achieve a fire rating, do not require fire seals

2.12 COMMUNICATIONS CABLING

- A. Provide empty two-gang outlet box with single gang cover and empty raceways where indicated for data and/or voice cabling to be installed by others. Terminate raceway above accessible ceiling or at underside of roof structure with insulated bushing. Provide blank coverplates on any unused outlets; verify location or quantity with Owner prior to project completion.

2.13 PAINTING

- A. Unless otherwise indicated, painting of electrical work in interior finished locations is work of the General Contractor. Where indicated, paint exposed materials in finished spaces, including conduit, boxes, panels, supports, attachments, and other equipment, to achieve a finished appearance to match adjacent surfaces.
- B. Paint outdoor electrical supports and other metal materials not finished with a factory painted finish or galvanized coating after completion of the work. Paint materials without a factory painted or galvanized finish in indoor exposed locations. Touch up any factory finishes damaged during construction.
- C. Painting products shall be Sherwin Williams DTM acrylic primer and DTM acrylic semi-gloss coatings, or equal by MAB or Benjamin Moore, rated for interior or exterior application and as recommended by the manufacturer for the substrate to which it will be applied. Colors shall be selected from the manufacturer's standard color sheet. Submit color charts for selection by Architect/Engineer.

PART 3 - EXECUTION

3.1 CONSTRUCTION WASTE MANAGEMENT

- A. The contractor, subcontractors, and their personnel shall follow the procedures and practices for waste separation, collection and transport as defined in the contractor's "Waste Management Plan" as required by Division 01 Section "Construction Waste Management."

3.2 METHOD OF PROCEDURE

- A. Care shall be used in the erection and installation of all equipment and materials to avoid marring surfaces of the work of other Contractors, as each Contractor will be held responsible for all such damage caused by the lack of precaution and due to negligence on the part of his workmen.

- B. All items of labor, material and equipment not specified in detail or shown on the drawings but incidental to or necessary for the complete and proper installation and proper operation of the several branches of the work described herein, shall be furnished as if called for in detail by the specifications or drawings.

3.3 ROUGH-IN

- A. Verify final locations for rough-ins with field measurements and with the requirements of the actual equipment to be connected. Refer to Architectural interior and exterior elevations and equipment specifications for rough-in requirements.

3.4 FASTENING

- A. Unless otherwise indicated, fasten electrical items and their supporting hardware securely to the building structure, including but not limited to conduits, raceways, cables, cable trays, busways, cabinets, panelboards, transformers, boxes, disconnect switches, and control components in accordance with the following:
 - 1. Fasten by means of wood screws or screw-type nails on wood, toggle bolts on hollow masonry units, concrete inserts or expansion bolts on concrete or solid masonry, machine screws, welded threaded studs, or spring-tension clamps on steel, and sheet metal screws in partitions of light steel construction. Threaded studs driven by a powder charge and provided with lock washers and nuts may be used instead of expansion bolts and machine or wood screws. Do not weld conduit, pipe straps, or items other than threaded studs to steel structures.
 - 2. Holes cut to depth of more than 1-1/2 inches in reinforced concrete beams or to depth of more than 3/4 inch in concrete shall not cut the main reinforcing bars. Fill holes that are not used.
 - 3. Ensure that the load applied to any fastener does not exceed 25 percent of the proof test load. Use vibration- and shock-resistant fasteners for attachments to concrete slabs.

3.5 ELECTRICAL INSTALLATIONS

- A. All construction shall conform to good trade practice and shall be installed in accordance with equipment manufacturers' recommendations and instructions. All materials shall be new and manufactured specifically for the use to be made of them. All mechanics shall be skilled in the work which they will be required to do so.
- B. Sequence, coordinate, and integrate the various elements of electrical systems, materials, and equipment. Comply with the following requirements:
 - 1. Coordinate electrical systems, equipment, and materials installation with other building components.

2. Verify all dimensions by field measurements.
3. Arrange for chases, slots, and openings in other building components during progress of construction, to allow for electrical installations.
4. Coordinate the installation of required supporting devices and sleeves to be set in poured-in-place concrete and other structural components, as they are constructed.
5. Sequence, coordinate, and integrate installations of electrical materials and equipment for efficient flow of the Work. Give particular attention to large equipment requiring positioning prior to closing in the building.
6. Where mounting heights are not detailed or dimensioned, install systems, materials, and equipment to provide the maximum headroom possible.
7. Install systems, materials, and equipment to conform with approved submittal data, including coordination drawings, to greatest extent possible. Conform to arrangements indicated by the Contract Documents, recognizing that portions of the Work are shown only in diagrammatic form. Where coordination requirements conflict with individual system requirements, refer conflict to the Architect.
8. Install systems, materials, and equipment level and plumb, parallel and perpendicular to other building systems and components, where installed exposed in finished spaces.
9. Install electrical equipment to facilitate servicing, maintenance, and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations. Extend grease fittings to an accessible location.
10. Install access panel or doors where units are concealed behind finished surfaces.
11. Install systems, materials, and equipment giving right-of-way priority to systems required to be installed at a specified slope.

3.6 DEMOLITION

- A. Remove and/or relocate all existing lighting fixtures, devices, conduit, wiring mounting hardware and any other fittings relating to existing electrical system which are in conflict with the new construction, which are made obsolete by the new construction, and are within areas which are to be renovated. Furnish all labor, equipment hauling, rigging, scaffolding, etc. necessary for the removal/relocation phase of the project.
- B. Owner shall have the option to keep (salvage) any or all salvageable items removed from building such as lighting fixtures, panelboards, etc. Any non-salvaged items shall become the property of the Contractor who shall recycle or legally dispose of the materials. Prior to removing any materials or equipment, the Contractor shall review with the Owner which materials or equipment the owner chooses to salvage. Contractor shall remove salvaged

materials with care so as not to damage the material, and deliver it to an Owner- designated storage area at the site.

- C. Except as otherwise noted in the contract documents, all salvaged conduit, wire, equipment, light fixtures, etc, shall become the property of the Contractor and shall be removed from the property and recycled or disposed of in accordance with all Federal, State, and local regulations.

3.7 WIRING METHODS

- A. Install all wiring, conduit and raceways in accordance with applicable articles of the NEC.
- B. Install conduits in perpendicular and parallel alignment with the structure, with uniform pitch draining toward boxes, properly formed bends, and securely attached to the building. Ream ends before installation and plug open ends after installation. Enter boxes squarely and secure conduit ends with approved bushings and locknuts.
- C. Set all device boxes squarely with faces flush to finished surfaces, accurately centered with panels and trim. Locate boxes in the centers of ceiling tiles where applicable or unless otherwise noted.
- D. Furnish and install wiring and conduit and make final connections to equipment furnished under other trade sections to provide a complete system ready to operate.

3.8 IDENTIFICATION

- A. Identify each panelboard, cabinet, pull box, disconnect switch, motor starter, control panel or enclosure with a nameplate on exterior cover indicating equipment tag and source circuit number.
- B. Panelboard
 - 1. Provide wire markers on each conductor in panelboard gutters and junction boxes.
 - 2. Label each circuit on panel schedule indicating area on load served.
- C. Nameplate Schedule
 - 1. Provide a 1" x 3" (minimum) engraved plastic laminate (Bakelite) designation plate, white letters on black field, for all panelboards, motor starters, special outlets, control panels, contactors, and disconnect switches.
 - 2. Plates for panels shall contain name of panel and voltage. Plates for motors shall contain name and designation of equipment driven and power source (circuit number).. Labels for switches to contain type of equipment served and its location.
- D. Provide circuit identification on cover plate of each device or equipment control switch.

Demolition & New Construction
at Wheeler Park
for the County of Union

USA # 2014-110

END OF SECTION 26 01 00

SECTION 28 16 25 – INTRUSION DETECTION SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. The work covered by this section of the specifications includes the furnishing of all labor, equipment, materials, and performance of all operations in connection with the installation of an Intrusion Detection System in two buildings on the site.
- B. Related Sections include the following:
 - 1. Division 01 Section “Construction Waste Management”.

1.3 SUBMITTALS

- A. Shop drawings shall be submitted prior to rough-in of raceways, wiring and any equipment. Shop drawings shall include:
 - 1. Manufacturer’s catalog cuts and specification for all equipment and devices demonstrating compliance with this specification.
 - 2. Riser diagram showing all devices, wiring, zoning, etc. for the system.
 - 3. Complete wiring diagram of each component
 - 4. Complete narrative on the operation of the system detailing each event in the system and the resulting actions throughout the system and interconnections to other systems.

1.4 QUALITY ASSURANCE

- A. The equipment and installation supervision furnished under this specification is to be provided by a manufacturer who has been engaged in production of this type of equipment for at least five (5) years, and has a fully-equipped service organization within fifty (50) miles of the installation. All equipment, systems, and materials furnished and installed under this section shall be installed in accordance with the applicable standards of.

1. National Codes: NEC, NFPA, IBC as applicable.
2. Approvals and listings: UL, FM, ANSI SIA CP-01, NYC-CoA, as applicable.
3. Local Authorities Having Jurisdiction (AHJ)

1.5 GENERAL

- A. Furnish and install equipment as described herein and as shown on the plans; to be wired, connected, and left in first class operating condition. The system shall use closed loop initiating device circuits with individual zone supervision, individual notification appliance circuit supervision, incoming and standby power supervision. Include control panel/keypad, door contacts, all wiring, connections to devices, outlet boxes, junction boxes, and all other necessary material for a complete operating system.
- B. All panels and peripheral devices shall be the standard product of a single manufacturer and shall display the manufacturer's name on each component.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Provide a complete two-zone intrusion detection and alarm system comprised of door contacts, keypad operator interfaces, and control panel with telephone dial-out capability. System shall include two keypads, one in each building, to allow enable/disable commands from either of the keypad locations as well as through an Apple "iOS-device".

2.2 MANUFACTURERS

- A. Subject to compliance with the specifications, manufacturers who may offer acceptable products include Bosch (basis-of-design), Honeywell, Simplex, or Genetex.

2.3 INTRUSION ALARM CONTROL PANEL

- A. The intrusion system control panel shall be Bosch Security Systems, Inc. Model B5512 comprising a fully integrated intrusion control system. The control panel shall support the following:
 1. Integrated Telephone Line Interface with programmable options for signaling and supervision.
 2. IP based communication option provides high-speed, secure alarm transport and control.

3. (4) programmable areas with perimeter and interior partitioning.
4. (8) on-board, class B hardwired points with expansion capability for a total of 40 wired or commercial wireless points.
5. The system shall support the use of an Apple iOS device for control. Functions to include arming, disarming, control of outputs,
6. Integrated real time clock, calendar, test timer and programmable scheduling capability for relay control and automatic execution of system functions based on a time / event.
7. Provide 1.4 amps of power for standby operation and 2 amps of alarm power, both rated at 12 VDC.
8. Wet-contact relay outputs and 1 Auxiliary wet-contact relay output with expansion capability for up to an additional 24 dry-contact relay outputs.
9. Control Panel enclosure to house aux power supply module with integrated battery charger with reverse hook up protection, battery supervision and battery deep discharge protection.

2.4 KEYPADS

- A. Two-line alphanumeric keypad with 32 character LCD display, adjustable volume and brightness, audible tones, power and alarm 'on' LED status indicators, illuminated keys, wall-mounted.
- B. Bosch Model B920.

2.5 MAGNETIC DOOR SWITCHES

- A. Recessed, reed type closed loop one-piece door switch, 9.5mm diameter, rated for up to 0.5 inch gap.
- B. Surface mounted style with encapsulated switch for use at overhead "roll-up" doors.
- C. Coordinate installation method in doors and frames with general contractor.

PART 3 - EXECUTION

3.1 CONSTRUCTION WASTE MANAGEMENT

- A. The contractor, subcontractors, and their personnel shall follow the procedures and practices for waste separation, collection and transport as defined in the contractor's "Waste Management Plan" as required by Division 01 Section "Construction Waste Management."

3.2 INSTALLATION

- A. Install/reinstall the system in accordance with the plans and specifications, all applicable codes and the manufacturer's recommendations. All wiring shall be installed in strict compliance with all the provisions of NEC - Article 760, Power-Limited Protective Signaling Circuits or if required, may be reclassified as non-power limited and wired in accordance with NEC-Article 760.

3.3 WIRING

- A. Install all wiring concealed above ceilings and in walls where possible using cable straps. No wiring shall lay loose on ceilings.
- B. Run wiring in conduit where it cannot be concealed. All wiring in area of exposed structure shall be installed in conduit. Wiring underground between buildings shall be approved for underground/wet locations and shall be run in Schedule 40 PVC conduit.
- C. All conductors shall be type THHN/THWN-2 insulated, or approved jacketed low-voltage alarm cable acceptable to Authority Having Jurisdiction. The minimum conductor size shall be #16 AWG for detection devices and #12 AWG for power supply and controls. All conductors shall be installed without the use of splices or lubrication. All wires shall be color coded.
- D. All wiring shall be identified at the control panel and at each terminal and junction box.
- E. All conduit, mounting boxes, junction boxes and panels are to be securely hung and fastened with appropriate fittings to insure positive grounding throughout the entire system. No wiring other than that directly associated with alarm detection, alarm or auxiliary functions will be permitted in alarm raceways.
- F. Use the types and size wire recommended by the equipment manufacturer. However, the size and quality shall not be less than specified or shown on the approved submittal drawing/riser diagram.

3.4 CLEANING AND ADJUSTING

- A. Cleaning: Remove paint splatters and other spots, dirt and debris. Touch up scratches and mars of finish to match original finish. Clean unit internally using methods and materials recommended by manufacturer.

- B. Occupancy Adjustments: When requested, within one month after date of Substantial Completion, provide on-site assistance in adjusting controls and sensitivities to suit actual occupied conditions.

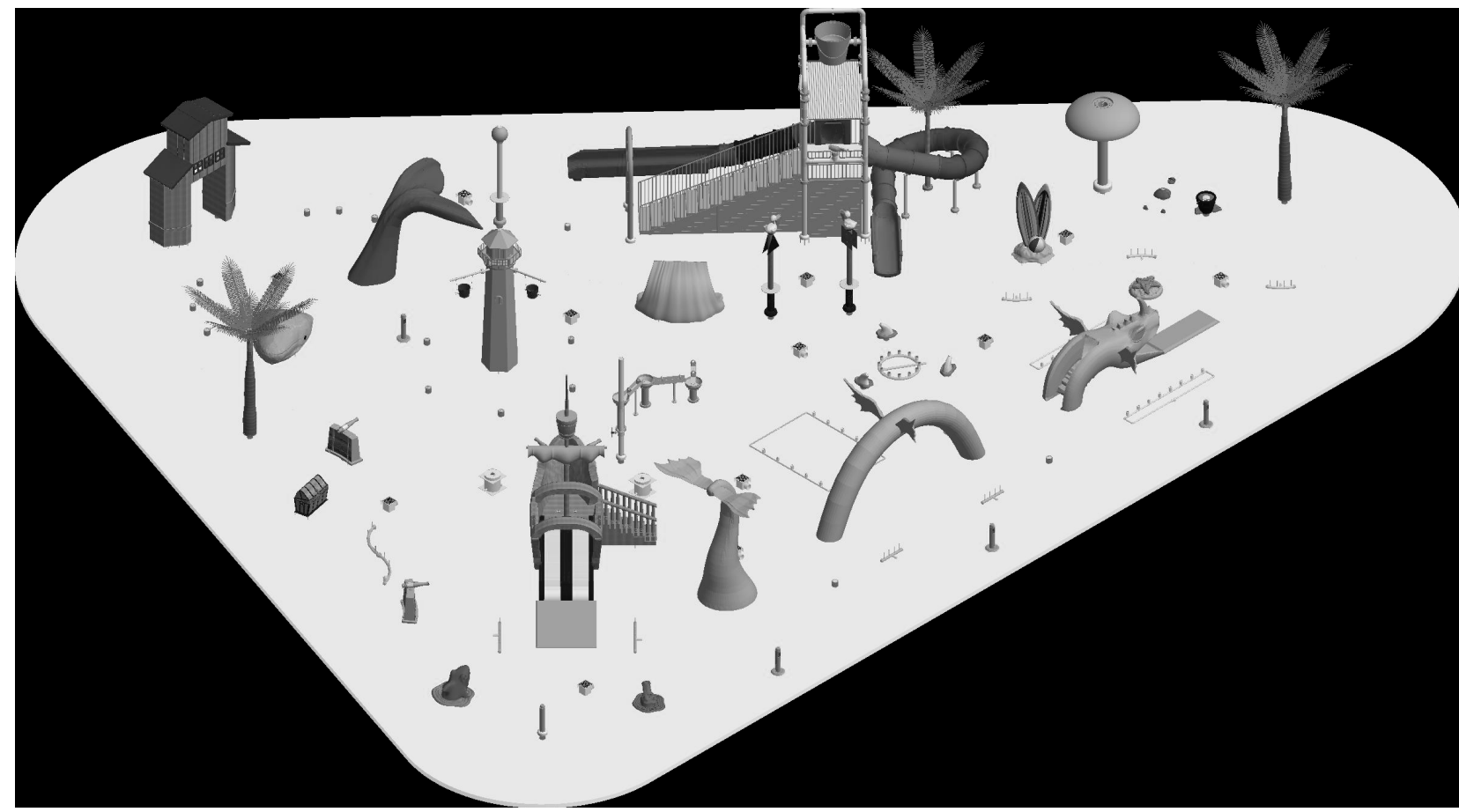
3.5 TESTING

- A. The completed system shall be fully tested in the presence of the owner's representative.

3.6 INSTRUCTION

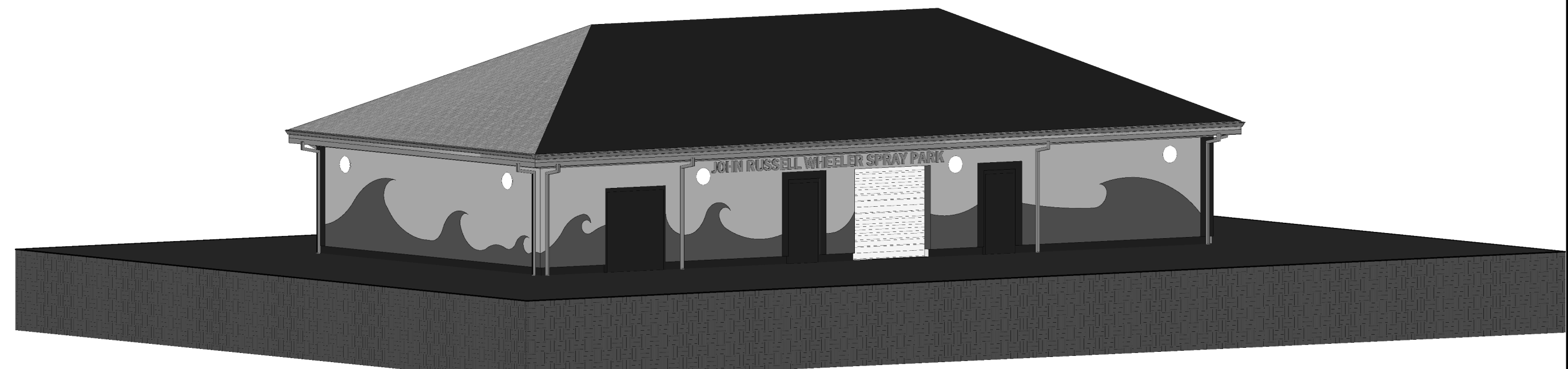
- A. Formal on site training shall be provided to the owner's representative/maintenance personnel and shall include instructions in the location, inspection, maintenance, testing, and operation of all electronic components.
- B. Provide a minimum of four (4) hours of general instruction.
- C. Provide a signed copy of the name(s) of the personnel giving the instructions and the personnel of the owner who were instructed

END OF SECTION 28 16 25



DEMOLITION AND NEW CONSTRUCTION AT WHEELER PARK FOR THE COUNTY OF UNION

BA # 63-2017 UNION COUNTY ENGINEERING PROJECT 2014-029



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1 LOCATION MAP
SCALE: N.T.S.

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DRAWING LIST

A-000	TITLE SHEET	CIVIL	ARCHITECTURAL	PLUMBING	
C-1	EXISTING CONDITIONS AND DEMOLITION PLAN	A-011	CODE INFORMATION & EGRESS PLAN	P-001	GENERAL NOTES & SYMBOL LIST
C-2	LAYOUT AND DIMENSIONING PLAN	A-050	DEMOLITION PLAN	P-050	POOL BUILDING AND LIFEGUARD HOUSE DEMOLITION PLANS - PLUMBING
C-3	GRADING AND UTILITY PLAN	A-100	FLOOR PLANS AND PARTITION TYPES	P-100	FLOOR & ROOF PLAN - PLUMBING
C-4	LANDSCAPING AND LIGHTING PLAN	A-140	ROOF PLANS	P-500	DETAILS
C-5	SOIL EROSION AND SEDIMENT CONTROL PLAN	A-160	ENLARGED TOILET & LOCKER ROOM PLANS		
C-6	CONSTRUCTION DETAILS	A-200	CEILING PLANS		
C-7	OVERALL SITE PLAN AND 3D VIEWS	A-300	ELEVATIONS		
		A-430	WALL SECTIONS		
		A-600	DOOR & FINISH SCHEDULES + DETAILS		
S-001	GENERAL NOTES	A-601	ENLARGED CONCRETE PLAN	M-001	GENERAL NOTES & SYMBOL LIST
S-100	FOUNDATION/SLAB PLAN & SECTIONS	AQ-101	SPRAY PARK EQUIPMENT LAYOUT & OVERALL PLAN	M-050	DEMOLITION PLANS - MECHANICAL
S-101	ROOF FRAMING PLAN & DETAILS	AQ-102	SPRAY PARK PARTIAL LAYOUT PLAN	M-100	FLOOR & ROOF PLAN - MECHANICAL
S-200	TYPICAL DETAILS	AQ-103	SPRAY PARK PARTIAL LAYOUT PLAN	M-600	DETAILS & SCHEDULES
S-201	TYPICAL DETAILS	AQ-104	SPRAY PARK PARTIAL LAYOUT PLAN		
		AQ-105	SPRAY PARK PARTIAL LAYOUT PLAN		
		AQ-106	SPRAY PARK PARTIAL LAYOUT PLAN		
		AQ-107	SPRAY PARK RETURN PIPING LAYOUT PLAN		
		AQ-108	SPRAY PARK ELECTRICAL LAYOUT PLAN		
		AQ-109	SPRAY PARK MANIFOLD LAYOUT	E-001	GENERAL NOTES & SYMBOL LIST
		AQ-110	SPRAY PARK MANIFOLD LAYOUT	E-050	POOL BUILDING AND LIFEGUARD HOUSE DEMOLITION PLANS - ELECTRICAL
		AQ-111	SPRAY PARK MANIFOLD LAYOUT	E-100	FLOOR PLANS - LIGHTING AND POWER
		AQ-112	SPRAY PARK MECHANICAL ROOM LAYOUT	E-500	DETAILS
		AQ-113	SPRAY PARK FILTRATION SYSTEM LAYOUT & MISC. DETAILS	E-600	SCHEDULES

CSI DIVISION

DIVISION 00 PROCUREMENT

00.01 ALL BIDDERS, UPON SUBMITTING BIDS, HEREBY CERTIFY THAT THEY HAVE REVIEWED THE ENTIRE SET OF CONTRACT DOCUMENTS. (CONTRACT DOCUMENTS CONSIST OF A COMPLETE SET OF DRAWINGS AND THE ENTIRE PROJECT MANUAL, INCLUDING ALL DIVISIONS & ANY/all ADDENDA) AND ARE AWARE OF, AND AGREE TO MEET THE INTENT OF THE CONTRACT DOCUMENTS WHETHER EXPRESSED OR IMPLIED.

00.02 PRODUCT MANUFACTURERS IN CONJUNCTION WITH SUBCONTRACTORS AND PRIME CONTRACTOR(S) ARE RESPONSIBLE FOR ALL COMPONENTS AND CALCULATIONS AND/OR CERTIFICATIONS OF THEIR PRODUCT AND FOR PROVIDING COMPLETE SYSTEMS/ASSEMBLIES TO MEET THE DESIGN INTENT OF THE PROJECT.

00.03 THE BIDDER/CONTRACTOR IS REQUIRED TO VISIT THE SITE & EXAMINE THE EXISTING CONDITIONS TO HIS/HER COMPLETE SATISFACTION PRIOR TO BIDDING. THE BIDDER/CONTRACTOR SHALL COMPARE THE EXISTING CONDITIONS TO THE DESIGN INTENT OF THE CONTRACT DOCUMENTS & SHALL IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING OF ANY/all DISCREPANCIES BEFORE SUBMITTING A BID. FAILURE TO DO SO WILL PLACE THE BURDEN OF RESPONSIBILITY ON THE CONTRACTOR TO PERFORM THE WORK AS INTENDED BY THE CONTRACT DOCUMENTS, AT NO ADDITIONAL COST TO THE OWNER.

DIVISION 01 AVAILABLE INFORMATION

01.01 ANY ADDITIONAL INFORMATION THAT IS NOT PART OF THE CONSTRUCTION DOCUMENTS, SUCH AS, BUT NOT LIMITED TO, SOIL REPORT(S), HAZARDOUS MATERIALS REPORT(S), EXISTING DRAWINGS, ETC., ARE INTENDED FOR REFERENCE ONLY AND ARE TO BE USED BY THE CONTRACTOR(S) AT HIS/HER OWN DISCRETION.

01.02 THE INDICATION OF SUBSTRATE & CONFIGURATION OF CONCEALED ITEMS & MATERIALS SHOWN ON THE CONSTRUCTION DOCUMENTS IS FOR GENERAL REFERENCE ONLY. THE CONTRACTOR(S) SHALL NOT BE ENTITLED TO ADDITIONAL COMPENSATION FOR ANY VARIANCE BETWEEN ACTUAL EXISTING CONDITIONS AND THAT REPRESENTED ON THE CONSTRUCTION DOCUMENTS.

GENERAL REQUIREMENTS

01.04 THE CONTRACTOR(S) SHALL DISCUSS & VERIFY, WITH ALL GOVERNING AUTHORITIES ALL CODE REQUIREMENTS INDICATED AND/OR REQUIRED FOR THE COMPLETE EXECUTION OF THE WORK AS INTENDED BY THE CONSTRUCTION DOCUMENTS.

01.05 THE CONTRACTOR(S) SHALL COMPLY WITH ALL FEDERAL, STATE, AND LOCAL CODES AND ORDINANCES HAVING JURISDICTION OVER THE PROJECT. THE CONTRACTOR(S) SHALL OBTAIN PERMITS & GIVE NOTICES TO SUCH AGENCIES IN AMPLIE TIME FOR OFFICIALS TO CONDUCT INSPECTIONS AND OBTAIN TIMELY APPROVALS. FAILURE TO COMPLY WILL SOLELY BE THE RESPONSIBILITY OF THE CONTRACTOR(S).

01.06 THE CONTRACTOR(S) SHALL PROVIDE PROTECTION FOR THE PUBLIC, OWNER'S STAFF, AND CONSTRUCTION WORKERS IN AND AROUND THE CONSTRUCTION AREA & ADJACENT PROPERTY. ADEQUATE BARRIERS & SIGNAGE SHALL BE PROVIDED TO EXERCISE CONTROL OF SAFE INGRESS & EGRESS OF PREMISES. FIRE EXITS SHALL NOT BE BLOCKED. PROPER SITE SECURITY DURING WORKING & OFF-HOURS SHALL BE MAINTAINED. BARRICADE ALL UNSAFE OR POTENTIALLY DANGEROUS CONDITIONS. THE CONTRACTOR(S) SHALL FOLLOW O.S.H.A. STANDARDS DURING THE COURSE OF THE PROJECT.

01.07 DO NOT SCALE THE DRAWINGS. USE CALCULATED DIMENSIONS ONLY. NOTE THAT NOT ALL DIMENSIONS ARE GIVEN ON THE CONSTRUCTION DOCUMENTS. SOME DIMENSIONS ARE IMPLIED. IF THE CONTRACTOR IS NOT SURE OF A GIVEN DIMENSION, HE/SHE SHALL SUBMIT A REQUEST FOR INFORMATION (R.F.I.) AND/OR SHALL FIELD VERIFY EXISTING DIMENSIONS.

01.08 ALL INFORMATION FOR ALL TRADES CONTAINED WITHIN THE CONSTRUCTION DOCUMENTS SHALL BE USED TOGETHER & IN CONCERT WITH ONE ANOTHER AS A WHOLE BODY OF INFORMATION FOR THE PROJECT. THE DRAWINGS & PROJECT MANUAL ARE COMPLEMENTARY & WHAT IS REQUIRED BY ONE, SHALL BE REQUIRED BY BOTH. NEITHER THE PRIME CONTRACTOR(S) NOR ANY SUBCONTRACTOR(S) SHALL BE RELIEVED OF THE RESPONSIBILITY TO PROVIDE ALL ITEMS REQUIRED BY THE INFORMATION & DESIGN INTENT INDICATED & IMPLIED. IN THE EVENT OF CONFLICTS BETWEEN DOCUMENTS, THE GREATER QUANTITY OR HIGHER QUALITY OF WORK SHALL PREVAIL AND BE PROVIDED.

01.09 ALL ITEMS LABELED 'EXISTING' ARE 'EXISTING' UNLESS OTHERWISE INDICATED. ITEMS NOT LABELED 'EXISTING' ARE TO BE PROVIDED. THE TERM 'PROVIDE' SHALL MEAN FURNISH & INSTALL AS IT IS USED THROUGHOUT THE CONTRACT DOCUMENTS.

SUMMARY WORK (SINGLE OVERALL PRIME CONTRACT)

01.10 THE SCOPE OF THIS SINGLE OVERALL PRIME CONTRACT INCLUDES ALL THE WORK AS INDICATED ON THE DRAWINGS AND IN THE PROJECT MANUAL. THE SINGLE OVERALL PRIME CONTRACTOR BEARS SOLE SOURCE RESPONSIBILITY FOR THE DELIVERY OF THE PROJECT TO 100% COMPLETION.

PROJECT COORDINATION (SINGLE OVERALL PRIME CONTRACT)

01.11 THE SINGLE OVERALL PRIME CONTRACTOR BEARS SOLE SOURCE RESPONSIBILITY FOR THE COORDINATION OF THE ACTIVITIES OF ALL SUBCONTRACTORS, SUB-SUBCONTRACTORS, MATERIAL SUPPLIERS, AND ALL PARTIES INVOLVED IN THE EXECUTION OF THE PROJECT.

01.12 ENGINEERING DRAWINGS (STRUCTURAL, MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, COMMUNICATIONS, AND SECURITY SYSTEM DRAWINGS, ETC.) ARE SHOWN DIAGRAMMATICALLY AND ARE NOT TO SCALE, NOR DO THEY SHOW THE EXACT LOCATION OF THEIR COMPONENTS. THE EXACT LOCATION AND CLEARANCES FOR EACH SUCH SYSTEM OR COMPONENT SHALL BE COORDINATED BY THE CONTRACTOR, PRIOR TO PURCHASE, FABRICATION, OR INSTALLATION OF THESE ITEMS. SHALL PREPARE COORDINATION DRAWINGS SHOWING THE DIFFERENT TRADES BY COLORS AND SHALL CONDUCT A COORDINATION MEETING WITH ALL OTHER CONTRACTOR(S) AFFECTED FOR A TOTAL UNDERSTANDING OF THE DESIGN INTENT. THE ARCHITECTS AND THE ENGINEER(S) SHALL BE INVITED TO ATTEND THIS MEETING AND OFFER INPUT PRIOR TO ANY WORK BEING FABRICATED OR INSTALLED.

QUALITY REQUIREMENTS

01.13 THE CONTRACTOR SHALL PROVIDE ALL MATERIAL, LABOR, SERVICES, ETC. TO COMPLETE THE ENTIRE WORK IN A MANNER ACCEPTABLE TO THE OWNER AND THE ARCHITECT. IT IS UNDERSTOOD THAT NOT EVERY DETAIL OR DIMENSION IS SHOWN IN THE CONTRACT DOCUMENTS. NOR ARE THEY NECESSARY FOR THE CONTRACTOR(S) TO PROVIDE A QUALITY PRODUCT. THE CONTRACTOR SHALL SUBMIT A REQUEST FOR INFORMATION (R.F.I.) IF NEEDED TO CLARIFY THE INTENT OF ANY DETAIL OR OTHER INFORMATION. HOWEVER, SUCH REQUEST FOR INFORMATION SHALL NOT CONSTITUTE A CHANGE IN THE SCHEDULE, OR IN THE CONTRACT AMOUNT. NO WORK SHOULD BE INSTALLED IF THE CONTRACTOR IS UNSURE OF THE DESIGN INTENT. INSTALLATION OF ANY WORK THAT DOES NOT COMPLY WITH THE DESIGN INTENT, AS DETERMINED BY THE ARCHITECT, SHALL BE SUBJECT TO REPLACEMENT AT THE CONTRACTOR'S EXPENSE.

TEMPORARY FACILITIES & ACCESS

01.16 CONSTRUCTION ACCESS ROADS, CURB CUTS, SOIL EROSION CONTROL, & THE LOCATION OF ALL TEMPORARY FACILITIES (INCLUDING POWER, TELEPHONE, WATER, WASTE, ETC.) SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR (UNLESS OTHERWISE NOTED), & SHALL BE COORDINATED WITH UTILITY COMPANIES, MUNICIPAL AUTHORITIES, ETC. AS REQUIRED.

PRODUCT REQUIREMENTS

01.17 ALL MATERIALS AND PRODUCTS SHALL BE PROTECTED AND PROPERLY STORED AS PER MANUFACTURER'S RECOMMENDATION. ALL MATERIALS AND PRODUCTS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S CURRENT PRINTED RECOMMENDATIONS TO MAINTAIN THE PROPER WARRANTIES.

01.18 PRIOR TO THE INSTALLATION OF ALL MAJOR BUILDING COMPONENTS, THE PRIME CONTRACTOR SHALL CONDUCT A PRE-INSTALLATION AND COORDINATION MEETING WITH THE MANUFACTURER'S REPRESENTATIVE. INCLUDED IN THE MEETING SHALL BE ANY SUBCONTRACTOR AND PRODUCT MANUFACTURER AFFECTED BY THE SPECIFIC WORK. FAILURE OF THE PRIME CONTRACTOR TO CONDUCT SUCH A MEETING, AND PROPERLY COORDINATE THE PROCESS, SHALL PLACE THE BURDEN FOR ANY & ALL PROBLEMS, RESULTING FROM SAID INSTALLATION, UPON THE PRIME CONTRACTOR.

01.19 LONG LEAD ITEMS SHALL BE IDENTIFIED BY THE CONTRACTOR(S) WITH NOTIFICATION TO THE ARCHITECT IN A TIMELY MANNER. FAILURE BY THE CONTRACTOR(S) TO OBTAIN SUBMITTAL APPROVALS, AND TO ORDER LONG LEAD ITEMS, SO AS NOT TO DELAY THE PROGRESS OF THE WORK, WILL NOT JUSTIFY AN EXTENSION OF THE SCHEDULE FOR COMPLETION, NOR WILL IT CAUSE PRODUCT SUBSTITUTIONS IN ORDER TO MEET THE SCHEDULE.

EXECUTION REQUIREMENTS

01.20 MISCELLANEOUS WOOD, COLD FORMED, OR ROLLED STEEL SHAPES, WHETHER BLOCKING OR SUB-FRAMING WHICH ARE REQUIRED FOR THE INSTALLATION OF OTHER ITEMS NECESSARY FOR A COMPLETE PACKAGE SHALL BE PROVIDED WHETHER OR NOT SPECIFICALLY INDICATED ON THE DRAWINGS.

01.21 DIMENSIONS GIVEN FOR MASONRY OPENINGS ARE NOMINAL. GENERAL CONTRACTOR(S) SHALL COORDINATE THE FABRICATION OF DOOR, WINDOW, AND WINDOW FRAMES TO BE INSTALLED IN MASONRY TO ACCOMMODATE ACTUAL DIMENSIONS VERIFIED IN THE FIELD WITH AND WITHOUT MORTAR JOINTS AS THEY OCCUR.

01.22 THE PRIME CONTRACTOR SHALL PROVIDE ALL NECESSARY SHORING & BRACING TO SUPPORT EXISTING OR NEW CONSTRUCTION NOT FULLY SET UNTIL PERMANENT SUPPORTS ARE ERECTED. TAKE ALL NECESSARY MEASURES TO PREVENT COLLAPSE OF ANY ELEMENT OF NEW OR EXISTING CONSTRUCTION.

01.23 THE PRIME CONTRACTOR SHALL FIRE STOP/SMOKE PROOF ANY/all PENETRATIONS AS REQUIRED TO MAINTAIN THE DESIGNATED FIRE RATINGS/SMOKE PROOFING OF THE CONSTRUCTION WHETHER EXISTING OR NEW. THE GENERAL CONTRACTOR SHALL ALSO EXTEND RATED CONSTRUCTION TO MAINTAIN CONTINUITY OF SAME THROUGH CONCEALED SPACES (VERTICAL & HORIZONTAL) AS REQUIRED.

01.24 ANY/all EQUIPMENT PROVIDED SHALL BE INSTALLED TO BE COMPLETELY FUNCTIONAL. EACH PIECE OF EQUIPMENT PROVIDED BY A CONTRACTOR, REQUIRING SERVICE CONNECTIONS BY ANOTHER CONTRACTOR SHALL BE COORDINATED BY THE GENERAL CONTRACTOR. STARTUP & TESTING OF EQUIPMENT SHALL BE PERFORMED & DOCUMENTED BY FACTORY AUTHORIZED PERSONNEL.

01.25 DETAILS & SECTIONS ON THE DRAWINGS ARE SHOWN AT SPECIFIC LOCATIONS & ARE INTENDED TO SHOW GENERAL REQUIREMENTS THROUGHOUT. DETAILS NOTED 'TYPICAL' IMPLY ALL 'LIKE-CONDITIONS' ARE TO BE TREATED SIMILARLY.

01.26 WORK NOT INDICATED IN PART OF THE DRAWING, BUT REASONABLY IMPLIED TO BE SIMILAR TO THAT SHOWN AT CORRESPONDING PLACES SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST.

01.27 MINOR DETAILS OR INCIDENTAL ITEMS NOT USUALLY SHOWN OR SPECIFIED, BUT NECESSARY FOR THE PROPER & COMPLETE EXECUTION OF ANY PART OF THE WORK SHALL BE INCLUDED AS IF THEY WERE SPECIFICALLY INDICATED IN THE CONSTRUCTION DOCUMENTS.

SUBMITTALS AND SUBSTITUTIONS

01.29 THE PROJECT HAS BEEN DESIGNED TO MEET A CERTAIN PROFESSIONAL STANDARD AND PRODUCTS HAVE BEEN SELECTED TO MEET SUCH STANDARDS. THE PRODUCTS SPECIFIED ARE THE PRODUCTS INTENDED TO BE USED. IN THE EVENT THAT SUBSTITUTIONS ARE SUBMITTED FOR REVIEW, A PROPER COMPARATIVE INFORMATION SHEET SHALL ALSO BE SUBMITTED. ALL REQUESTS FOR SUBSTITUTION SHALL BE MADE WITHIN THE FIRST 90 DAYS AFTER THE CONTRACTOR HAS BEEN AWARDED THE CONTRACT FOR CONSTRUCTION. NO SUBSTITUTION WILL BE CONSIDERED AFTER THIS PERIOD.

01.30 THE PRIME CONTRACTOR SHALL PROVIDE ALL REQUIRED SCHEDULES, SUCH AS BUT NOT LIMITED TO: SUBMISSION SCHEDULE, CONSTRUCTION SCHEDULE, & SCHEDULE OF VALUES PRIOR TO SUBMISSION OF THE FIRST APPLICATION FOR PAYMENT. NO APPLICATION FOR PAYMENT WILL BE APPROVED BY THE ARCHITECT UNTIL THIS PREREQUISITE IS COMPLIED WITH PROPERLY.

01.31 THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SUFFICIENTLY IN ADVANCE OF THE WORK TO ALLOW PROPER TIME FOR REVIEW. MATERIALS SHALL NOT BE FABRICATED OR DELIVERED TO THE SITE BEFORE THE SHOP DRAWINGS HAVE BEEN APPROVED.

01.32 SHOP DRAWINGS SHALL BE REVIEWED BY THE ARCHITECT/ENGINEER FOR BASIC CONFORMANCE TO THE DESIGN INTENT ONLY AFTER PRIOR APPROVAL BY THE PRIME CONTRACTOR. THIS REVIEW DOES NOT RELIEVE THE CONTRACTOR OR HIS SUB-CONTRACTORS OF RESPONSIBILITY FOR FULL COMPLIANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DIMENSIONS & CLEARANCES TO BE CONFIRMED & CORRELATED AT THE JOB SITE, FOR MATERIALS QUANTITIES & PROPER FABRICATION, FOR PROPER MEANS & METHODS, FOR PROPER SEQUENCING OF CONSTRUCTION, FOR THE PROPER COORDINATION WITH OTHER TRADES, AND FOR PROVIDING SAFE AND SATISFACTORY CONSTRUCTION OPERATIONS.

01.33 EACH CONTRACTOR IS ADVISED THAT CERTAIN COLOR SCHEDULE SELECTIONS MAY HAVE PREVIOUSLY BEEN MADE, REVIEWED, AND APPROVED BY THE OWNER & RETURNED TO THE CONTRACTOR FOR EXECUTION. ALL CONTRACTORS SHALL TAKE NOTE & HEREAFTER STRONGLY BE ADVISED THAT MATERIAL SUBSTITUTIONS SUBMITTED LATER MAY BE REQUIRED TO BE PROVIDED WITH CUSTOM COLORS, TEXTURES, & FINISHES BASED UPON SELECTIONS PREVIOUSLY APPROVED. MATERIAL SUBSTITUTIONS ARE SUBJECT TO REJECTION SOLELY ON APPEARANCE.

01.34 THE ARCHITECT WILL TAKE APPROPRIATE ACTION UP TO THREE (3) TIMES FOR EACH ITEM SUBMITTED. SUBMITTALS REQUIRING MORE THAN THREE (3) REVIEWS DUE TO INCORRECT OR INCOMPLETE INFORMATION SHALL BE SUBJECT TO A REVIEW FEE FOR EACH SUBSEQUENT SUBMITTAL. THIS FEE SHALL BE AT THE HOURLY RATE OF THE ARCHITECT & ENGINEER, AND SHALL BE PRE-PAID TO THE ARCHITECT BY THE CONTRACTOR PRIOR TO ANY ADDITIONAL CONSIDERATION. FEES PAID SHALL IN NO WAY CONSTITUTE AN OBLIGATION BY THE ARCHITECT TO APPROVE ANY SUBMITTAL THAT IN HIS/HER OPINION DOES NOT COMPLY WITH THE DESIGN INTENT OF THE CONTRACT DOCUMENTS. FURTHERMORE, ANY SUCH ADDITIONAL REVIEW TIME SHALL NOT BE A BASIS FOR AN EXTENSION OF TIME.

STANDARD WARRANTY

01.35 IF SUBSTITUTIONS ARE APPROVED, THE CONTRACTOR SHALL NOTIFY ALL OTHER TRADES AFFECTED BY THE SUBSTITUTION & FULLY COORDINATE THE IMPACT ON THE PROJECT. ANY ADDITIONAL COST RESULTING FROM SUBSTITUTIONS SHALL BE PAID BY THE CONTRACTOR PROPOSING THE SUBSTITUTION.

DIVISION 02 DEMOLITION

01.36 THE PRIME CONTRACTOR SHALL PROVIDE, AS PART OF ITS REQUIRED CLOSE-OUT DOCUMENTS, A STANDARD WARRANTY COVERING ALL MATERIALS, PRODUCTS, AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE BY THE ARCHITECT. THIS STANDARD WARRANTY IS A BASIC REQUIREMENT OF THE PRIME CONTRACT AND SHALL BE EXTENDED BY SPECIFIC WARRANTY REQUIREMENTS OF THE VARIOUS PRODUCTS AND SYSTEMS AS INDICATED THROUGHOUT THE CONTRACT DOCUMENTS.

02.01 THE ACTUAL SCOPE OF DEMOLITION SHALL NOT BE LIMITED TO WHAT IS SPECIFICALLY INDICATED ON THE DRAWINGS OR WITHIN THE PROJECT MANUAL, BUT SHALL INCLUDE ANY AND ALL COMPLETE OR SELECTIVE DEMOLITION AS MAY BE NECESSARY TO ACCOMPLISH THE INTENDED CONSTRUCTION. THIS APPLIES TO THE WORK OF ALL TRADES.

EXTERIOR FERROUS METALS

05.02 ALL FERROUS METAL USED ON OR EXPOSED TO THE EXTERIOR OF THE BUILDING INCLUDING BUT NOT LIMITED TO: STRUCTURAL AND MISCELLANEOUS FRAMING, WINDOWS, DOORS AND FRAMES, HANDRAILS, LITELS, ETC. SHALL BE HOT-DIPPEED AND GALVANIZED PRIOR TO INSTALLATION AND PAINTING.

EXTERIOR WOOD

06.02 ALL WOOD FRAMING LUMBER AND BLOCKING EXPOSED TO THE ELEMENTS OR USED IN CONTACT WITH MASONRY, CONCRETE, AND/OR ROOFING SHALL BE PRESSURE TREATED FOR RESISTANCE TO DETEIORATION FROM MOISTURE.

DIVISION 07 SEALANTS

07.01 ANY AND ALL CONSTRUCTION JOINTS INCLUDING JOINTS BETWEEN DIFFERENT ITEMS AND MATERIALS, JOINTS SURROUNDING PENETRATIONS THROUGH MATERIALS, AND CRACKS WITHIN MATERIALS, ECT., WHETHER ON THE INTERIOR OR EXTERIOR OF THE BUILDING, SHALL BE FILLED WITH AN APPROPRIATE SEALANT AS REQUIRED. ON THE INTERIOR OF THE BUILDING, SAID SEALANT SHALL BE PAINTABLE ON THE EXTERIOR OF THE BUILDING, SAID SEALANT SHALL BE WEATHERPROOF AND IN A COLOR SELECTED BY THE ARCHITECT.

ROOFING

07.02 PRIOR TO THE START OF ROOF WORK, THE CONTRACTOR IS REQUIRED TO CONDUCT A PRE-INSTALLATION CONFERENCE WITH THE ROOFING MANUFACTURER, THE ROOF INSTALLER, OTHER AFFECTED CONTRACTORS, AND THE ARCHITECT TO DISCUSS IN DETAIL THE INSTALLATION PROCESS. UPON COMPLETION, A WALK-THROUGH MEETING SHALL BE DONE WITH THE CONTRACT DOCUMENTS AND THE MANUFACTURER'S BEST PRACTICE RECOMMENDATIONS FOR THE WARRANTY SPECIFIED.

DIVISION 09

09.01 UNLESS FACTORY FINISHED, OR OTHERWISE SPECIFICALLY NOTED ON THE CONSTRUCTION DOCUMENTS, ALL EXPOSED SURFACES (BOTH INTERIOR & EXTERIOR OF THE BUILDING) SHALL BE PAINTED/COATED IN COLORS & TEXTURES AS SELECTED BY THE ARCHITECT/OWNER. NO SURFACES ARE TO BE LEFT UNFINISHED UNLESS SPECIFICALLY NOTED ON THE CONTRACT DOCUMENTS.

FIRE EXTINGUISHERS

10.02 FIRE EXTINGUISHER TYPE, CABINET QUANTITY, AND LOCATION SHALL BE REVIEWED AND COORDINATED BY THE CONTRACTOR WITH THE BUILDING OFFICIAL AND THE FIRE MARSHAL PRIOR TO THE COMMENCEMENT OF WORK TO INSURE COMPLIANCE WITH LOCAL REGULATIONS.

SPECIALTIES

10.03 THE CONTRACTOR SHALL COORDINATE QUANTITIES, LOCATION & POWER NEEDS FOR ALL FOLDING WALLS, PARTITIONS, PROJECTION SCREENS, WALL CLOCKS, & ANY OTHER SPECIALTY ITEMS.

DIVISION 11 EQUIPMENT

11.01 EQUIPMENT SUPPORT MEMBERS AS WELL AS PLUMBING & ELECTRICAL REQUIREMENTS SHALL BE COORDINATED IN A PRE-INSTALLATION CONFERENCE BY THE GENERAL CONTRACTOR WITH SUPPLIER/INSTALLER, ARCHITECT, & ANY OTHER CONTRACTOR AFFECTED BY THIS WORK.

ROOF PENETRATIONS

23.02 ALL ROOF PENETRATIONS FOR MECHANICAL ITEMS (PIPES, DUCTS, CURBS, ETC.) SHALL BE FULLY COORDINATED BY THE GENERAL CONTRACTOR FOR EXACT LOCATION, SIZE, SUPPORT, ETC. FAILURE TO COORDINATE THESE ITEMS MAY RESULT IN CHANGES IN THE FIELD AT THE EXPENSE OF THE GENERAL CONTRACTOR.

DIVISION 26 ELECTRICAL

26.01 CONVENIENCE & DATA OUTLETS, WALL SWITCHES, AND FIXTURES SHALL BE COORDINATED WITH THE LOCATION OF LOCKERS, TOILET PARTITIONS ETC. PRIOR TO INSTALLATION. FAILURE TO COORDINATE THESE ITEMS MAY RESULT IN CHANGES IN THE FIELD AT THE EXPENSE OF THE PRIME CONTRACTOR.

AA

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DEMOLITION AND NEW CONSTRUCTION

AT

WHEELER PARK

FOR THE

COUNTY OF UNION

No.	Date	Issue or Revision
1	09.26.17	RID SET

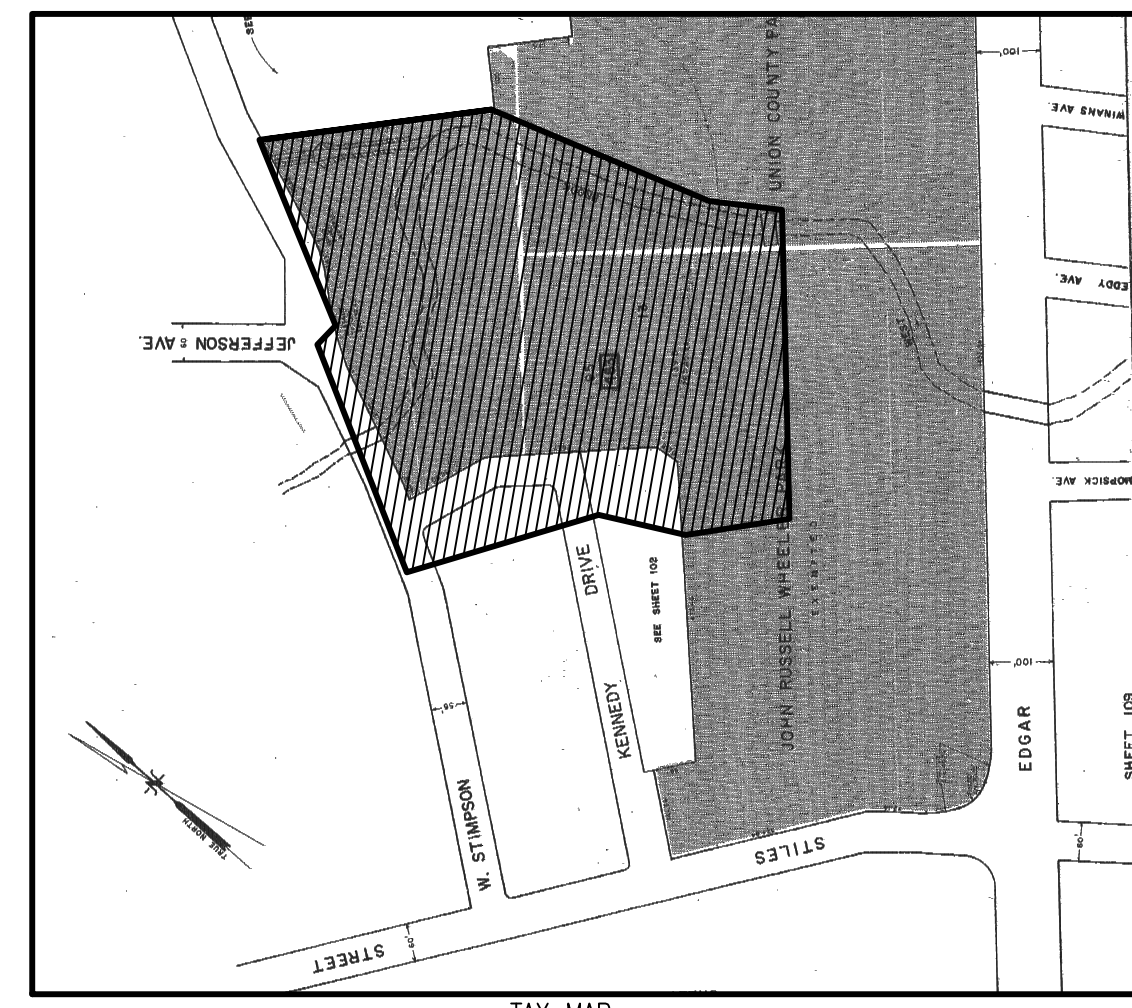
Drawing Title

TITLE SHEET

Scale: AS NOTED USA Project No. 2014-110

Drawing Date: 09.26.17 Drawing No. A-000

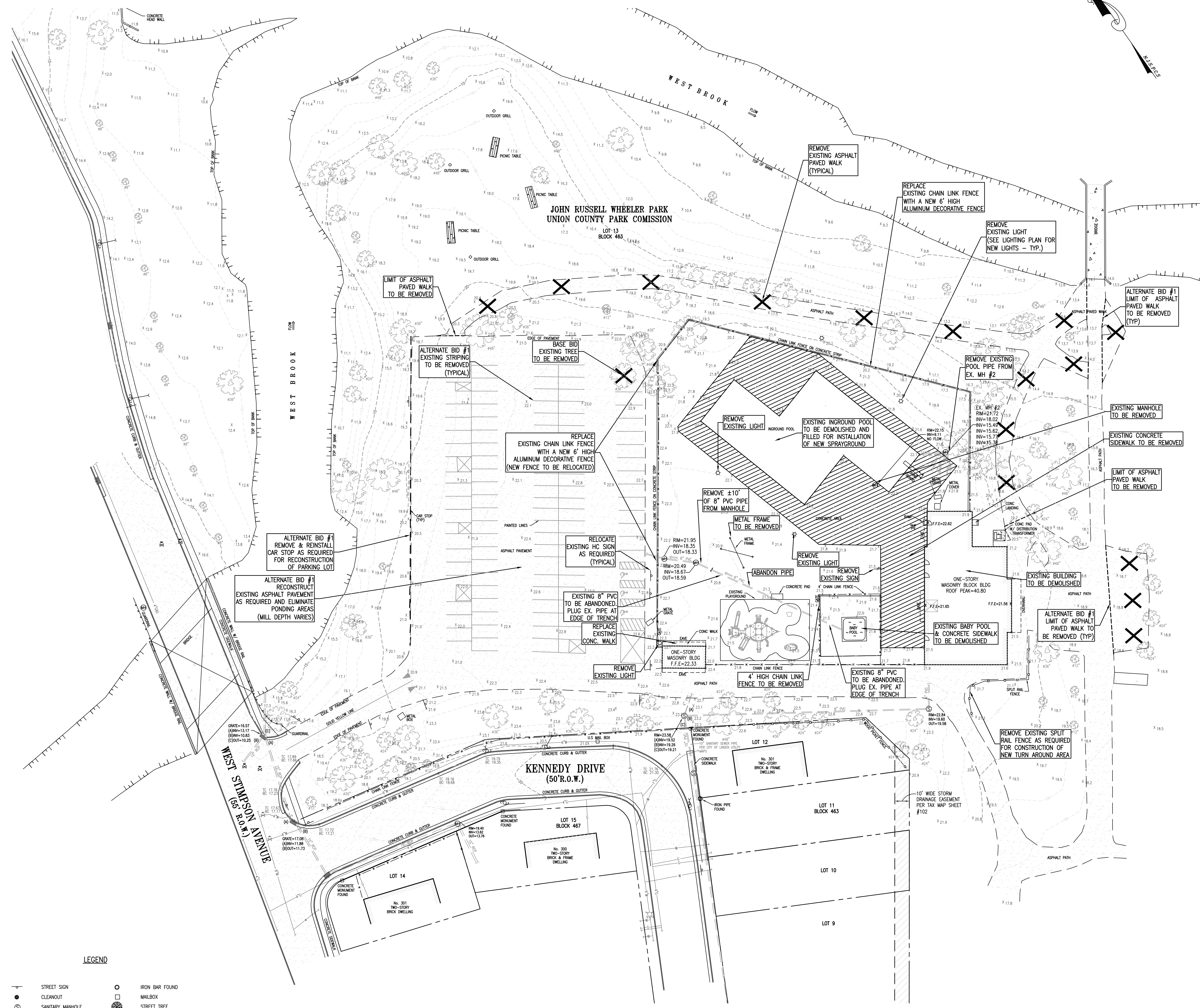
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CERTIFICATION:
I CERTIFY THAT THIS PLAN IS THE RESULT OF A FIELD SURVEY MADE ON OCTOBER 15, 2014, BY ME OR UNDER MY DIRECT SUPERVISION, IN ACCORDANCE WITH THE RULES AND REGULATIONS PROMULGATED BY THE STATE BOARD OF PROFESSIONAL ENGINEERS & LAND SURVEYORS. THE INFORMATION SHOWN HEREON CORRECTLY REPRESENTS THE CONDITIONS FOUND AT, AND AS OF, THE DATE OF THE FIELD SURVEY, EXCEPT SUCH IMPROVEMENTS OR EASEMENTS, IF ANY, BELOW THE SURFACE AND NOT VISIBLE.
SUBJECT TO SUCH FACTS AS AN ACCURATE TITLE SEARCH MAY DISCLOSE.

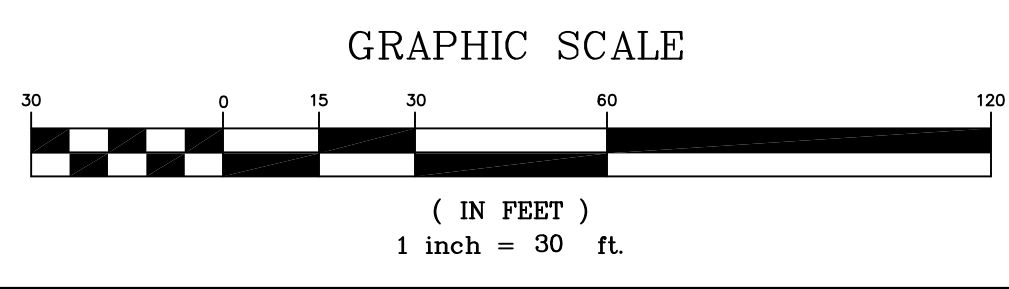
DESCRIPTION:
BEING KNOWN AND DESIGNATED AS LOT 13 IN BLOCK 463 ON THE CITY OF UNION TAX ASSESSMENT MAP.
BEING MORE COMMONLY KNOWN AS JOHN RUSSELL WHEELER PARK CITY OF UNION, UNION COUNTY, NEW JERSEY.

- GENERAL NOTES:**
- THE PREMISES SHOWN HEREON WERE SURVEYED WITHOUT THE BENEFIT OF A TITLE SEARCH AND IS SUBJECT TO SUCH FACTS AS A CURRENT TITLE SEARCH MAY DISCLOSE. THE PROPERTY ALSO MAY BE SUBJECT TO THE FOLLOWING:
 - A.) RIGHTS OF CLAIMS OF PARTIES IN POSSESSION SHOWN BY THE PUBLIC RECORD.
 - B.) RIGHTS OF CLAIMS OF PARTIES IN POSSESSION NOT SHOWN BY THE PUBLIC RECORD.
 - C.) EASEMENTS OR CLAIMS OF EASEMENTS, SHOWN BY THE PUBLIC RECORD.
 - D.) EASEMENTS OR CLAIMS OF EASEMENTS, NOT SHOWN BY THE PUBLIC RECORD.
 - NO DETERMINATIONS HAVE BEEN MADE REGARDING UNDERGROUND UTILITIES WHICH MAY EXIST, UNLESS AS SHOWN.
 - NO DETERMINATIONS HAVE BEEN MADE REGARDING HAZARDOUS MATERIAL CONDITIONS.
 - NO DETERMINATIONS HAVE BEEN MADE REGARDING WETLANDS LOCATION.
 - PROPERTY LOCATED IN A FLOOD ZONE AE & X (BASE FLOOD ELEVATIONS DETERMINED) PER A PLAN ENTITLED "FLOOD HAZARD/ RISK MAP, FOR THE CITY OF UNION COMMUNITY PANEL NO. 34467 0034 F, MAP NO. 3403000344 EFFECTIVE DATE SEPTEMBER 2006, 2006."
 - REFERENCED MADE TO THE NATIONAL GEODETIC VERTICAL DATUM OF 1929.
 - PLANNING FEATURES SHOWN HEREON HAVE BEEN DRAWN IN ACCORDANCE WITH FIELD SURVEY PERFORMED BY HARBOR CONSULTANTS, INC., OCTOBER 15, 2014.
 - EXISTING UTILITY INFORMATION SHOWN HEREON HAS BEEN COLLECTED FROM VARIOUS SOURCES AND IS NOT GUARANTEED AS TO ACCURACY OR COMPLETENESS. THE CONTRACTOR SHALL VERIFY ALL INFORMATION TO HIS SATISFACTION PRIOR TO CONSTRUCTION. WHERE EXISTING UTILITIES ARE TO BE CROSSED BY PROPOSED CONSTRUCTION, TEST PITS SHALL BE DUG BY THE CONTRACTOR PRIOR TO CONSTRUCTION TO ASCERTAIN EXISTING DEPTHS, MATERIALS AND SIZES. TEST PIT INFORMATION SHALL BE GIVEN TO THE OWNER PRIOR TO CONSTRUCTION TO PERMIT ADJUSTMENTS AS REQUIRED TO AVOID CONFLICTS.
 - TOPOGRAPHIC INFORMATION SHOWN HEREON HAS BEEN DRAWN IN ACCORDANCE WITH FIELD SURVEY PERFORMED BY HARBOR CONSULTANTS, INC., OCTOBER 15, 2014.
- NOTES:
PUBLIC STREET UTILITY SHOWN ARE APPROXIMATE AND SUBJECT TO VERIFICATION IN THE FIELD.

LEGEND

- | | | | |
|-----|----------------------|-----|-----------------------|
| —+— | STREET SIGN | ○ | IRON BAR FOUND |
| —●— | CLEANOUT | □ | MANHOLE |
| —○— | SANITARY MANHOLE | ⊙ | STREET TREE |
| —○— | DRAINAGE MANHOLE | ⊙ | EXIST. SPOT ELEVATION |
| —○— | CATCH BASIN | —○— | EXISTING CONTOUR LINE |
| —○— | CATCH BASIN | —○— | GAS LINE |
| —○— | SOIL BORING | —○— | WATER LINE |
| —○— | OUT WIRE | —○— | GAS VALVE |
| —○— | UTILITY POLE | —○— | WATER VALVE |
| —○— | P.K. NAIL FOUND | —○— | FIRE HYDRANT |
| —○— | CONC. MONUMENT FOUND | —○— | LIGHT POST |
| —○— | TO BE REMOVED | | |

ELEVATIONS SHOWN ARE BASED ON NAVD 88



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CERTIFICATE OF AUTHORIZATION NO. 246A27962100

USA Project No. 2014-110
Drawing Date 09.26.2017
Drawing No. C-1
Scale AS INDICATED
Drawing Title EXISTING CONDITIONS AND DEMOLITION PLAN
Drawn By C/VF
Checked By JMB

DEMOLITION AND NEW CONSTRUCTION AT WHEELER PARK FOR THE COUNTY OF UNION

1 09.26.17 BID SET

No. Date Issue or Revision

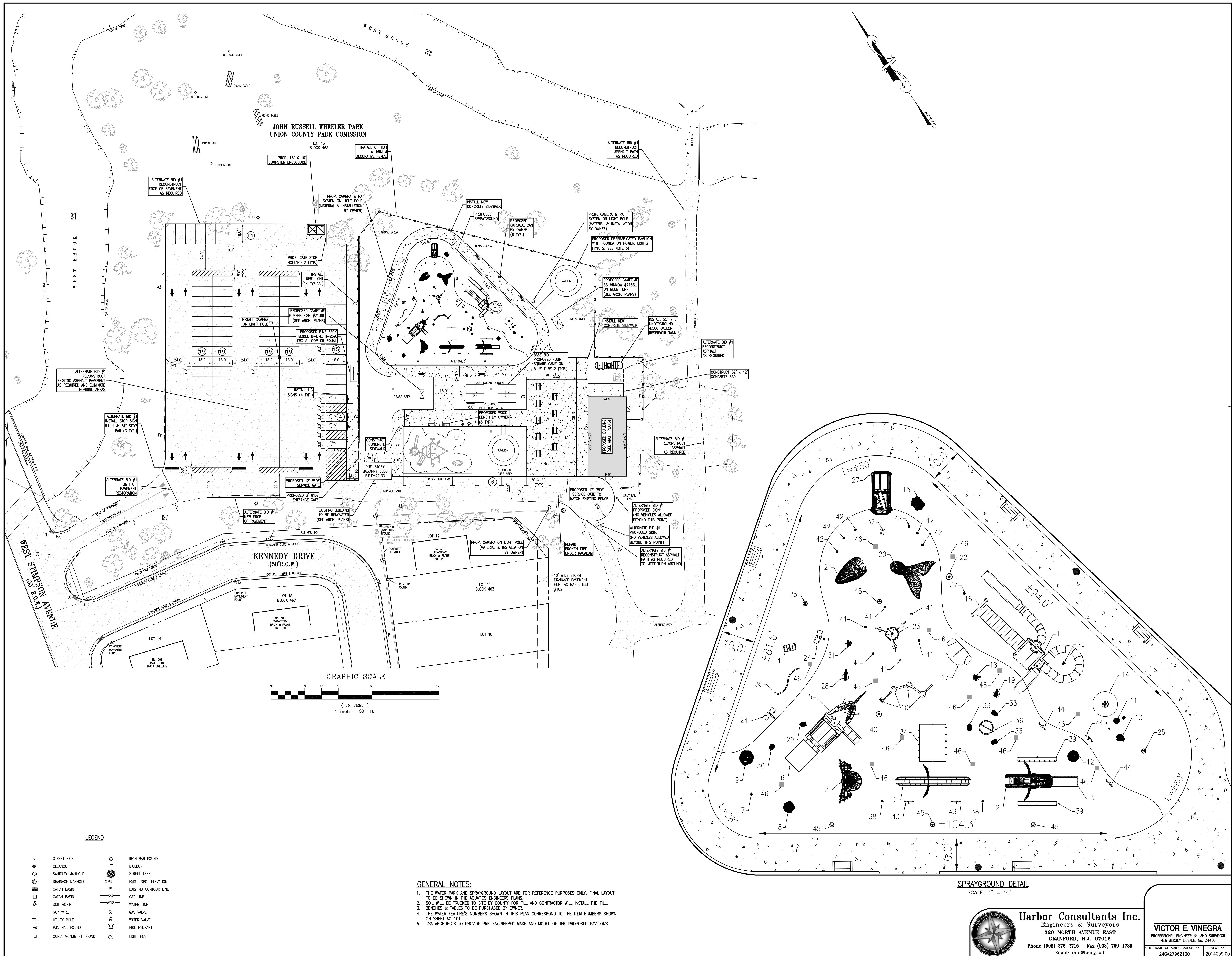
Drawing Title
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DEMOLITION AND NEW CONSTRUCTION AT
WHEELER PARK
FOR THE
COUNTY OF UNION

1 09.26.17 BID SET
No. Date Issue or Revision

Drawing Title	
LAYOUT & DIMENSIONING PLAN	
Scale	USA Project No.
AS INDICATED	2014-110
Drawing Date	Drawing No.
09.26.2017	C-2
Drawn By	Checked By
CVF	JMB

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PROFESSIONAL ENGINEER & LAND SURVEYOR
NEW JERSEY LICENSE No. 34460
CERTIFICATE OF AUTHORIZATION No. 24GAZ7962100 PROJECT No. 2014059.05

GENERAL NOTES:

1. THE WATER PARK AND SPRAYGROUND LAYOUT ARE FOR REFERENCE PURPOSES ONLY. FINAL LAYOUT TO BE SHOWN IN THE AQUATICS ENGINEERS PLANS.
2. SOIL WILL BE TRUCKED TO SITE BY COUNTY FOR FILL AND CONTRACTOR WILL INSTALL THE FILL.
3. BENCHES & TABLES TO BE PURCHASED BY OWNER.
4. THE WATER FEATURES' NUMBERS SHOWN IN THIS PLAN CORRESPOND TO THE ITEM NUMBERS SHOWN ON SHEET AQ 101.
5. USA ARCHITECTS TO PROVIDE PRE-ENGINEERED MAKE AND MODEL OF THE PROPOSED PAVILIONS.

SPRAYGROUND DETAIL
SCALE: 1" = 10'



- LEGEND**
- STREET SIGN
 - CLEANOUT
 - SANITARY MANHOLE
 - DRAINAGE MANHOLE
 - CATCH BASIN
 - CATCH BASIN
 - SOIL BORING
 - GUY WIRE
 - UTILITY POLE
 - P.K. NAIL FOUND
 - CONC. MONUMENT FOUND
 - IRON BAR FOUND
 - MAILBOX
 - STREET TREE
 - EXIST. SPOT ELEVATION
 - EXISTING CONTOUR LINE
 - GAS LINE
 - WATER LINE
 - GAS VALVE
 - WATER VALVE
 - FIRE HYDRANT
 - LIGHT POST



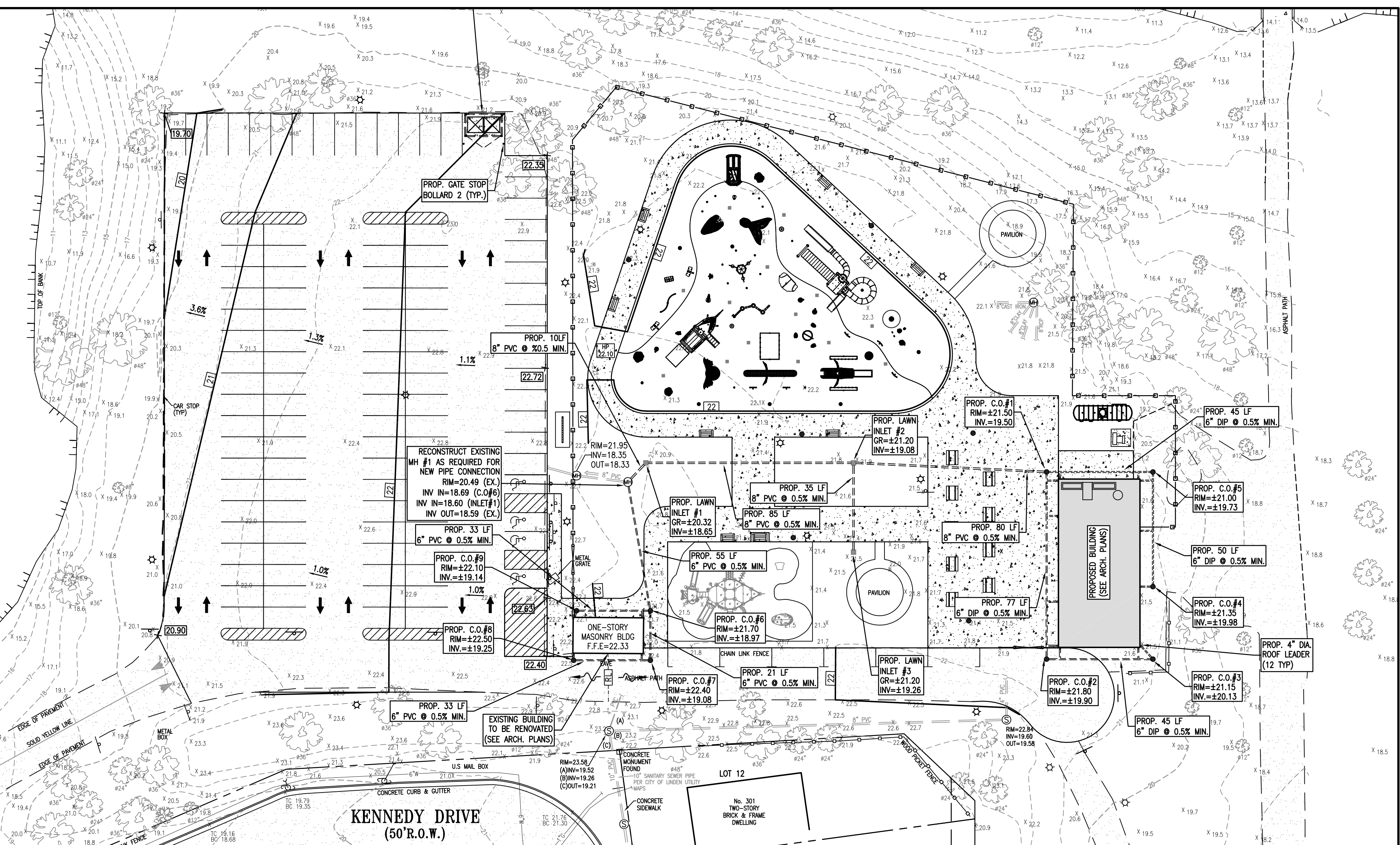
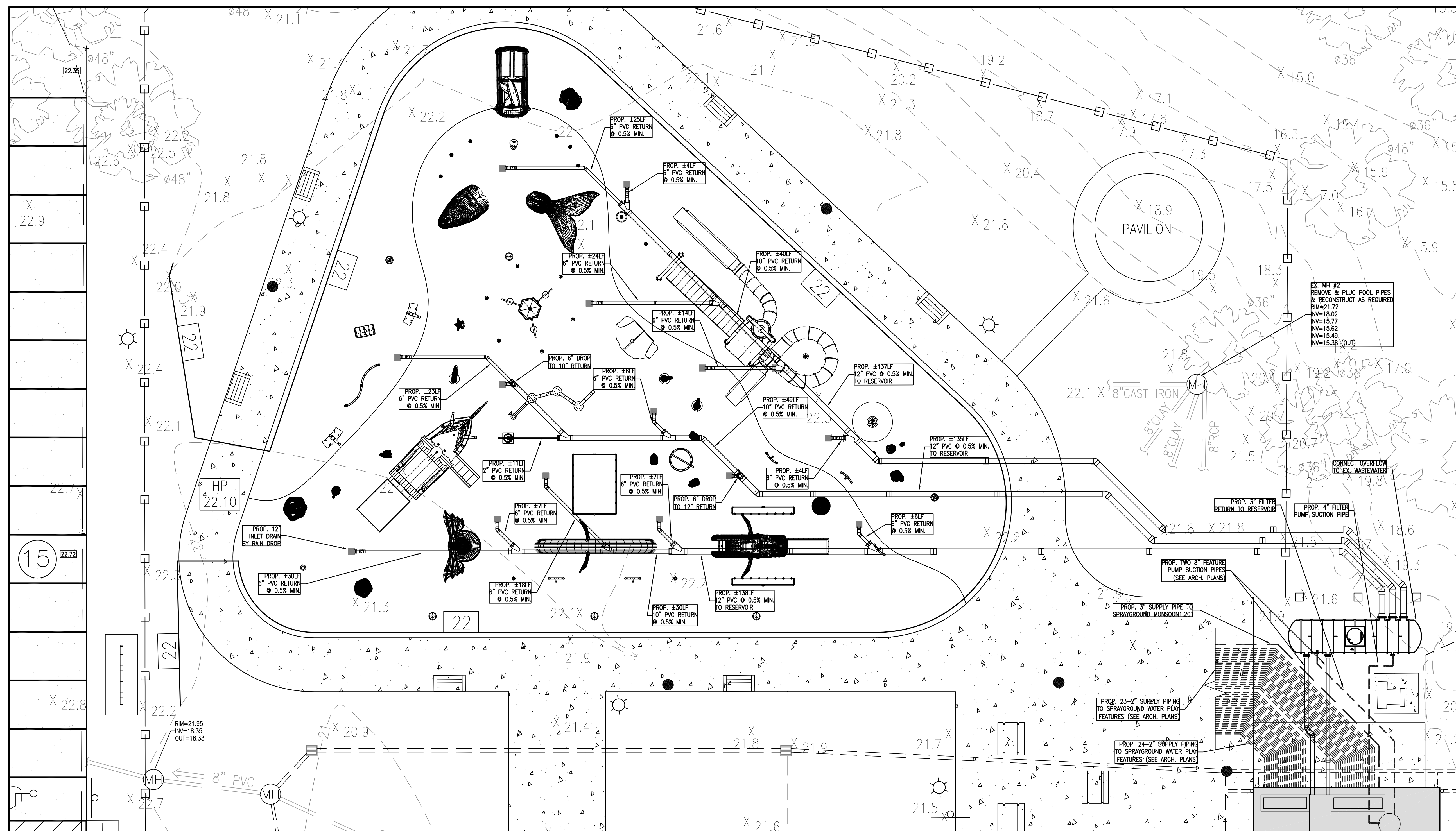
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WATER PARK NOTES:

- THIS SPRAYGROUND LAYOUT & PIPING ARE FOR REFERENCE PURPOSES ONLY. FOR FINAL LAYOUT REFER TO THE PLANS FROM RAIN DROP PRODUCTS, LLC AND THE ARCHITECTURAL PLANS. SPRAYGROUND SURFACE TO BE SLOPED AT 0.5% MINIMUM TOWARD THE PROPOSED FIBERGLASS INLETS.
- CONSTRUCT THE SPRAYGROUND WITH A POURED IN PLACE CONCRETE SURFACE AND AS DIRECTED BY OWNER. (SEE ARCHITECTURAL PLANS)
- THE CONTRACTOR MAY RECYCLE THE CONCRETE AS LONG AS THE GRADATION AND COMPOSITION ARE IN ACCORDANCE WITH THE NJDOT SPECIFICATIONS FOR RECYCLED CONCRETE. ONCE THE PROJECT IS AWARDED THE CONTRACTOR WILL BE REQUIRED TO SUBMIT CUT SHEETS FOR RECYCLING CONCRETE ON-SITE IN ACCORDANCE WITH NJDOT SPECIFICATIONS.
- BLUE TURF TO BE SYN-LAWN SYNPLAY 600.
- THE TURF, 55 MOUND, PUFFER FISH AND FOUR SQUARE GAMES ARE TO BE INSTALLED ON AN AGGREGATE BASE TO ALLOW FOR PROPER DRAINAGE. COMPACT THE GROUND UNDER SYNTHETIC TURF USING A VIBRATING PLATE COMPACTOR OR ROLLER. THEN INSTALL 3" TO 4" LAYER OF ROCK AGGREGATE NO MORE THAN 1/4" SIZE STONE. SPREAD, LEVEL AND COMPACT THIS SUB-BASE. USE THE VIBRATING COMPACTOR OR ROLLER TO FULLY PACK THE SUB-BASE.



GRADING PLAN
SCALE: 1" = 30'

SPRAYGROUND DETAIL
SCALE: 1" = 10'

GENERAL CONSTRUCTION NOTES:

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS NECESSARY FOR CONSTRUCTION IN ACCORDANCE WITH EXISTING LOCAL, COUNTY OR STATE REGULATIONS, OR ANY OTHER AGENCY HAVING JURISDICTION IN THESE MATTERS.
- THE CONTRACTOR IS RESPONSIBLE FOR AND SHALL VERIFY ALL DIMENSIONS AND DETAILS BEFORE PROCEEDING WITH WORK. ANY DISCREPANCIES SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
- ALL REPAIRED AREAS AT THE SITE WHICH ARE NOT DESIGNATED AS PAVED OR GRAVEL AREAS SHALL BE TOPSOILED AND SEEDDED TO MATCH EXISTING SURFACE FINISHES. ALL REPAIRED AREAS SHALL BE CONTROLLED BY THE CONTRACTOR FOR EROSION AND SEDIMENT CONTROL IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS.
- ALL GRADING OPERATIONS SHALL PROVIDE FOR POSITIVE DRAINAGE AWAY FROM ALL BUILDINGS AND STRUCTURES AND SHALL ELIMINATE FLOODING AREAS.
- THE CONTRACTOR SHALL MAINTAIN THE FLOW OF ALL STREAMS, DRAINAGE DITCHES, STORM SEWERS AND SANITARY SEWERS AT ALL TIMES BY A MEANS ACCEPTABLE TO THE ENGINEER AND ALL RESPONSIBLE AGENCIES.
- THE CONTRACTOR SHALL MAINTAIN ALL UTILITIES SERVICE FUNCTIONS UNLESS WRITTEN APPROVAL BY THE RESPONSIBLE UTILITY PERMITS HIM TO DO OTHERWISE. SAME SHALL BE COORDINATED TO INSURE COMPLETION WITHIN THE TIME PERMITTED.
- INFORMATION AS TO THE EXISTING UTILITIES HAS BEEN COLLECTED FROM VARIOUS SOURCES. THE RESULTS OF SUCH INVESTIGATIONS ARE SHOWN ON THE CONTRACT DRAWINGS AND ARE NOT GUARANTEED AS TO ACCURACY. THE CONTRACTOR IS PARTICULARLY DETERMINED TO THE FACT THAT UNDERGROUND OBJECTS ON MATERIAL, LOCATION, ELEVATION OR TYPE IS NOT WARRANTED TO BE APPROXIMATELY CORRECT (NOR CAN THEY BE ASSUMED TO BE THE ONLY SUBSURFACE OBJECTS OR MATERIAL WHICH MAY BE ENCOUNTERED IN THE WORK).
- THE CONTRACTOR IS RESPONSIBLE TO COORDINATE THE LOCATION OF THE UTILITIES WITH THE UTILITY DEPARTMENTS PRIOR TO CONSTRUCTION.
- THE COORDINATION OF THE LOCATION OR RELOCATION WHERE REQUIRED OF TELEPHONE, ELECTRIC, GAS AND WATER FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR AND SAME SHALL BE COORDINATED WITH THE RESPECTIVE UTILITIES COMPANIES TO INSURE COMPLETION WITHIN THE TIME PERMITTED.
- THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN MEANS OF SAFE INGRESS AND EGRESS TO RESIDENTS THROUGHOUT THE COURSE OF THE WORK AND TO PROVIDE FOR THE SAFE MAINTENANCE AND PROTECTION OF THE SAME.
- THE CONTRACTOR'S LICENSED SUPERVISOR SHALL PROVIDE THE CONSTRUCTION STAKEOUT FOR THE PROJECT.
- THE CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS FOR THE STATE OF NEW JERSEY WORKER HEALTH AND SAFETY ACT (NJAC 12:10 ET SEQ.) AS AMENDED AND THE UNITED STATES OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA) (29 CFR 1910), AS AMENDED WITH REGARD TO WORKER AND JOB SITE SAFETY.
- THE CONTRACTOR IS ADVISED THAT HE SHALL EXERCISE EXTREME CARE WHAT WORKING NEAR EXISTING WATER MARKS IN THE PROJECT AREA.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AN ADEQUATE POTABLE WATER SUPPLY TO ALL AFFECTED AREAS DURING THE SHUT DOWN OF ANY EXISTING WATER LINES.
- THE SOMERSET-UNION SOIL CONSERVATION DISTRICT COVERING SOIL EROSION AND SEDIMENT CONTROL MEASURES. ACCORDINGLY, ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE INSTALLED AS PER THE REQUIREMENTS OF THE SOMERSET-UNION SOIL CONSERVATION DISTRICT AND AS DIRECTED BY THE ENGINEER.
- EXCAVATIONS OR TRENCHING WITHIN CLOSE PROXIMITY TO UNDERGROUND FACILITIES OR UTILITY POLES WILL REQUIRE PROTECTION TO THE PREVENT DAMAGE OR INTERRUPTION OF SERVICE TO FACILITIES. THE COST TO PROVIDE THIS PROTECTION WILL BE BORNE BY THE CONTRACTOR.
- THE CONTRACTOR SHALL ABIDE BY ALL REQUIREMENTS OF THE "HIGH VOLTAGE PROTECTIVE ACT".
- ALL TRENCHES SHALL BE BACKFILLED WITHOUT DELAY. OPEN TRENCHES SHALL BE KEPT TO A MINIMUM. EXACT LOCATION OF NEW TREES IF ANY TO BE CUT DOWN AT THE SITE PRIOR TO INSTALLATION AND APPROVED BY THE COUNTY REEF PLAN OFFICE.
- THE CONTRACTOR CANNOT DISPOSE OF EXCESS EXCAVATED MATERIAL, STOCKPILE CONSTRUCTION MATERIALS OR DEBRIS BROWNE MATERIAL FROM PROPERTIES WHICH ARE LISTED OR ELIGIBLE FOR LISTING ON THE NEW JERSEY OR NATIONAL REGISTER OF HISTORIC PLACES.

GENERAL NOTES:

- THE SITE IS KNOWN AS LOT 13 IN BLOCK 463 AS SHOWN ON THE CITY OF LINCOLN MAP SHEET 102. THE SITE IS COMMONLY KNOWN AS JOHN RUSSELL WHEELER PARK, CITY OF LINCOLN, UNION COUNTY, NEW JERSEY.
- EXISTING BOUNDARY, TOPOGRAPHIC, PLANNING FEATURES AND UTILITIES SHOWN HAVE BEEN TAKEN FROM A PLAN ENTITLED: "BOUNDARY AND TOPOGRAPHIC SURVEY OF 2118 EAST ST. GEORGE AVENUE, LOT 4, BLOCK 1, CITY OF LINCOLN, UNION COUNTY, NEW JERSEY" PREPARED BY HARBOR CONSULTANTS, INC. AND DATED 12/26/12.
- THE PROPERTY IS SITUATED IN FLOOD ZONE AE & X (BASE FLOOD ELEVATIONS DETERMINED) PER "FIRM" FLOOD INSURANCE RATE MAP FOR THE CITY OF LINCOLN, COUNTY/PANEL No. 340467 0204 F, MAP No. 340390004F, EFFECTIVE DATE SEPTEMBER, 2006.
- NO DETERMINATIONS HAVE BEEN MADE REGARDING UNDERGROUND UTILITIES WHICH MAY EXIST.
- NO DETERMINATIONS HAVE BEEN MADE REGARDING HAZARDOUS MATERIAL CONDITIONS.
- SOLID WASTE IS TO BE DEPOSITED OF IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS. ALL EXISTING BUILDINGS AND STRUCTURES, IF ANY, SHALL BE REMOVED PRIOR TO CONSTRUCTION OF THE DEVELOPMENT.
- THE COUNTY WILL PROVIDE FILL.
- ANY HYDROIC SOIL ENCOUNTERED IN EXCAVATION WHERE CONCRETE STRUCTURES ARE INTENDED TO BE INSTALLED SHALL BE REPLACED WITH BORROWED FILL MATERIALS APPROVED BY THE CITY OF LINCOLN.
- ANY EXISTING ABOVE GROUND OR UNDER GROUND STRUCTURES SHALL BE REMOVED IN CONFORMANCE WITH STATE REGULATIONS AND ORDINANCES.
- THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO THE START OF CONSTRUCTION. THE LOCATION OF EXISTING AND PROPOSED UTILITY SERVICES SHOWN ARE APPROXIMATE AND MUST BE CONFIRMED INDEPENDENTLY WITH THE UTILITY COMPANIES PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- THE CONTRACTOR SHALL NOTIFY HARBOR CONSULTANTS, INC. OF ANY MATERIAL EXISTING SITE CONDITIONS OFFER, OR, IF THE PROPOSED CONSTRUCTION WOULD BE IMPACTED BY ANY OTHER SITE FEATURES IDENTIFIED HEREIN.
- THE CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF EXISTING TOPOGRAPHIC INFORMATION PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION.
- SOIL BASE MATERIAL FOR SIDEWALKS, CURBS OR ASPHALT SHALL BE FREE FROM ORGANICS AND OTHER UNDESIRABLE MATERIALS. SHOULD SUB BASE BE DETERMINED UNSUITABLE, SUB BASE IS TO BE REMOVED AND FILLED WITH APPROVED FILL MATERIAL COMPACTED TO 95% OPTIMUM DENSITY (AS DETERMINED BY MOISTURE PROCTOR METHOD).
- EXISTING AND PROPOSED UTILITY SERVICES SHOWN ARE APPROXIMATE AND MUST BE CONFIRMED INDEPENDENTLY WITH THE UTILITY COMPANIES PRIOR TO COMMENCEMENT OF CONSTRUCTION. SHALL REQUEST UTILITY COMPANY MANUWALS AND SHALL COORDINATE WITH AFFECTED UTILITY COMPANIES. WHERE EXISTING UTILITIES ARE TO BE LOCATED, THE CONTRACTOR SHALL VERIFY ALL INFORMATION TO HIS SATISFACTION PRIOR TO CONSTRUCTION. CONSTRUCTION TO ACCURATELY EXISTING INVERTS, MATERIALS AND SIZES. TEST PIT INFORMATION SHALL BE GIVEN TO THE DESIGN ENGINEER PRIOR TO PROCEEDING WITH ANY CONSTRUCTION AS REQUIRED TO AVOID CONFLICTS.
- ALL PROPOSED IMPROVEMENTS SHALL BE IN ACCORDANCE WITH THE 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN.
- CONTRACTOR SHALLS CONNECT THE ROOF LEADERS FROM THE PROPOSED BUILDING AND THE LEADWATER BUILDING TO THE EXISTING STORM SEWER SYSTEM.

ELEVATIONS SHOWN ARE BASED ON NAVD 88

DIG SAFELY - NEW JERSEY
CALL BEFORE YOU DIG
1-800-272-1000
IT'S THE LAW

NEW JERSEY ONE CALL
CONTRACTORS SHALL CALL 1-800-272-1000
MINIMUM THREE DAYS, MAXIMUM 10 DAYS NOTICE PRIOR TO BEGINNING EXCAVATION

LEGEND

—	STREET SIGN	○	IRON BAR FOUND
●	CLEANOUT	□	MALIBOX
○	SANITARY MANHOLE	□	STREET TREE
○	DRAINAGE MANHOLE	+	EXIST. SPOT ELEVATION
○	CATCH BASIN	—	EXISTING CONTOUR LINE
○	CATCH BASIN	—	GAS LINE
○	SOIL BORING	—	WATER LINE
○	CUT WIRE	—	CABLE VALVE
○	UTILITY POLE	—	WATER VALVE
○	P.X. NAIL FOUND	—	FIRE HYDRANT
○	CONC. MONUMENT FOUND	—	LIGHT POST

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DEMOLITION AND NEW CONSTRUCTION
AT
WHEELER PARK
FOR THE
COUNTY OF UNION

1 09.26.17 BID SET

Drawing Title
GRADING AND UTILITY PLAN

Scale AS INDICATED USA Project No. 2014-110

Drawing Date 09.26.2017 Drawing No. C-3

Drawn By CVF Checked By JMB

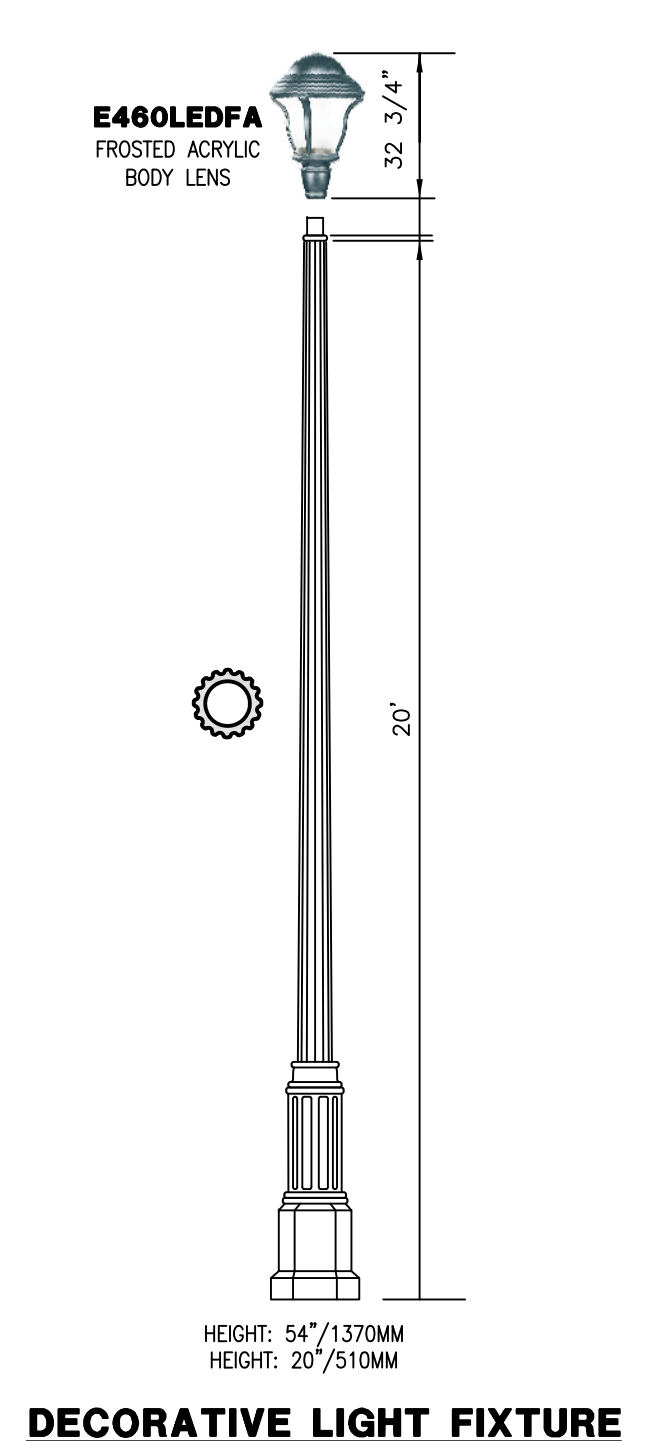
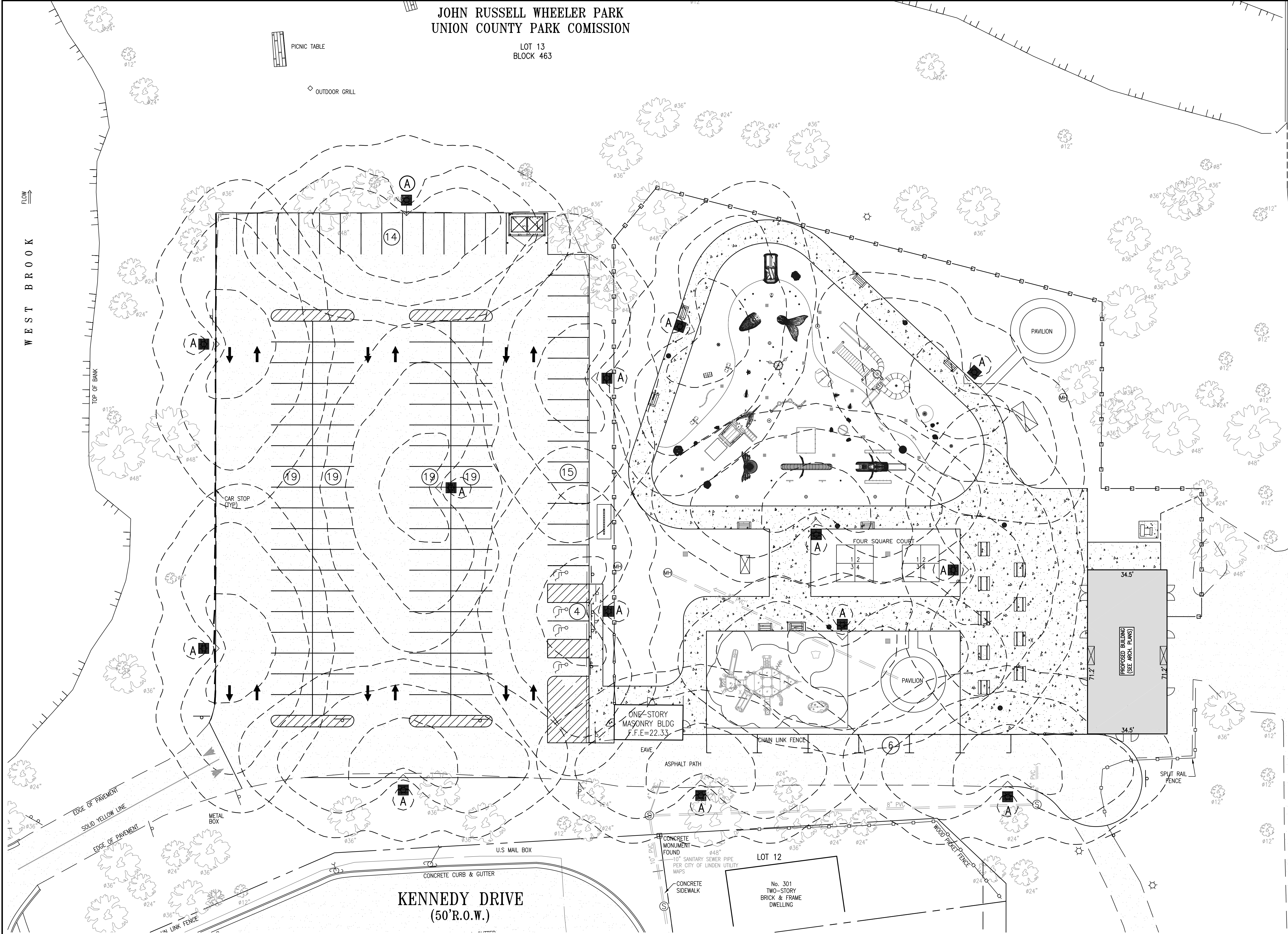


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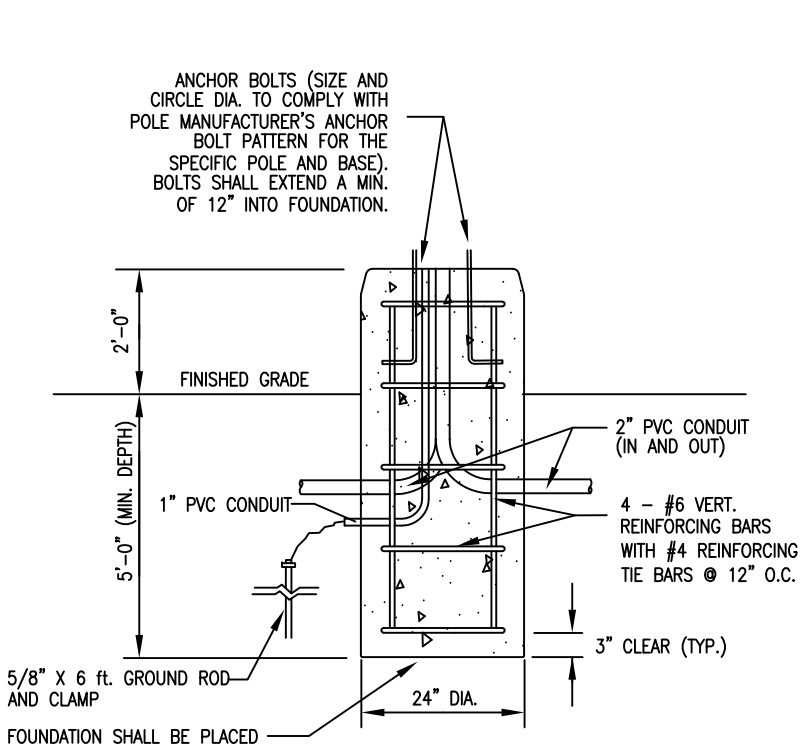
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CERTIFICATE OF AUTHORIZATION No. 24CA27962100 PROJECT No. 2014059.05

JOHN RUSSELL WHEELER PARK
UNION COUNTY PARK COMMISSION

LOT 13
BLOCK 463



DECORATIVE LIGHT FIXTURE
N.T.S.



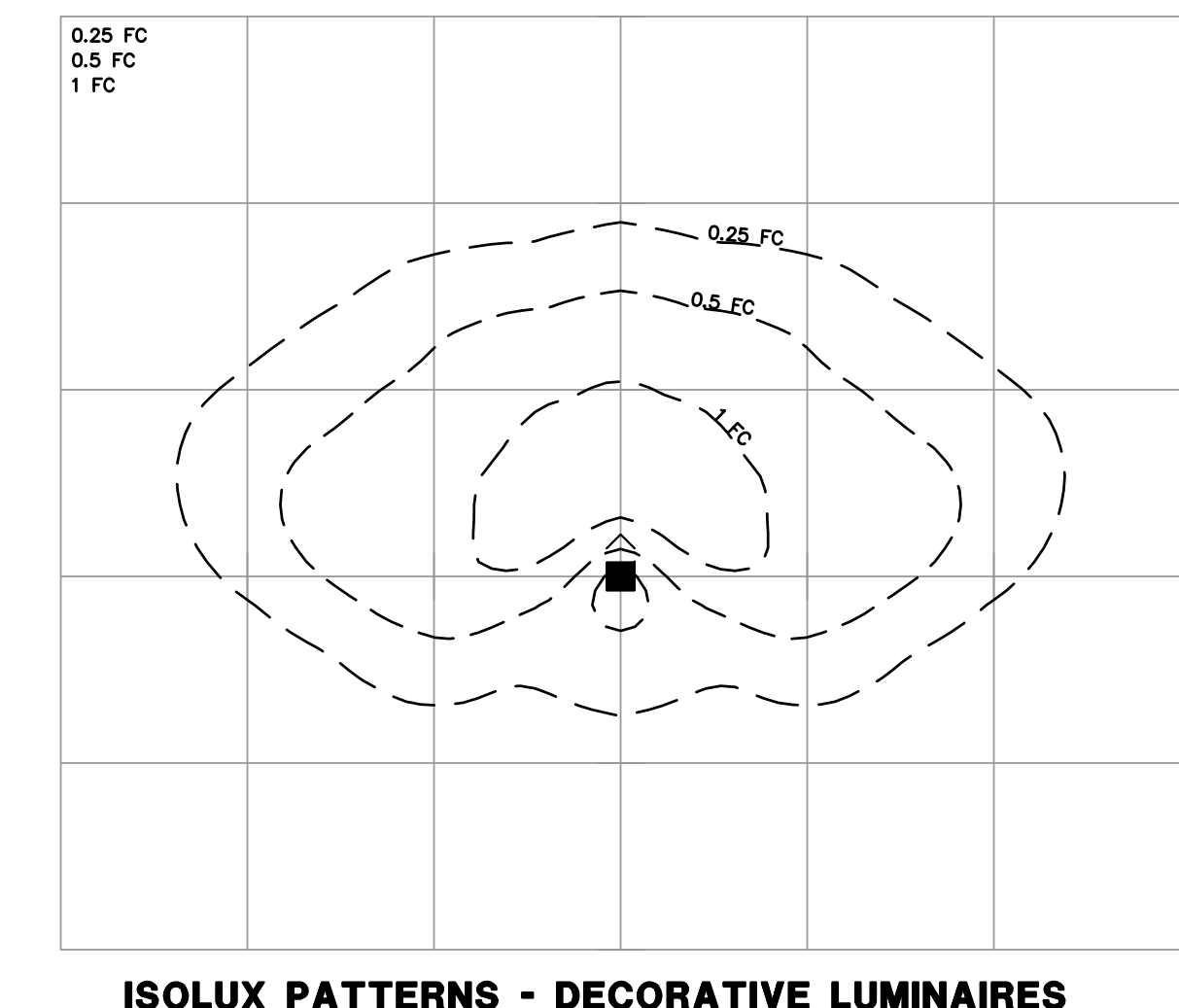
LIGHT BASE FOUNDATION DETAIL
N.T.S.

THIS PLAN IS ONLY TO BE USED AS A GUIDE TO THE PLACEMENT OF LIGHTING FIXTURE & LANDSCAPING. IT IS NOT TO BE USED FOR OTHER ASPECTS OF CONSTRUCTION. REFER TO GRADING & UTILITIES PLAN AND SUPPLEMENTS THERETO.

ELEVATIONS SHOWN ARE BASED ON NAVD 88

LEGEND

—	STREET SIGN	□	IRON BAR FOUND
○	CLEANOUT	□	HANDBOX
⊙	SANITARY MANHOLE	○	STREET TREE
⊕	DRAINAGE MANHOLE	○	EXIST. SPOT ELEVATION
⊖	CATCH BASIN	—	EXISTING CONTOUR LINE
⊗	CATCH BASIN	—	GAS LINE
⊘	SOIL BORING	—	WATER LINE
⊙	GUY WIRE	—	GAS VALVE
⊕	UTILITY POLE	—	WATER VALVE
⊙	P.K. NAIL FOUND	⊗	FIRE HYDRANT
⊙	CONC. MONUMENT FOUND	⊙	LIGHT POST



IESNA LM-63-2002 [TEST]302435
[TEST]AD STERLING LIGHTING
[ISSUE DATE] 2/21/2013 [MANUFACT] Sterling Lighting
LUMINAIRE: E460LEDFA
LUMINAIRE: Euro Series Fixture, Next GEN LED's,
Frosted Body Lens, Optic Type 3
LUMINAIRE: LED's
LUMINAIRE: OPTIC TYPE 3
LUMINAIRE: OUTPUT: 9239 Lumens
[OTHER] STD @ 120.0V, 1.12A, 133.48W;
AOL# 2-257-248C; Driver: LED70W-054-C1400-M-D

30 FEET BETWEEN AXIS TICK-MARKS
LUMENS PER LAMP = 9239
LIGHT LOSS FACTOR = 0.85
OPTICAL HEIGHT = 23 FEET
ARM LENGTH = 0 FEET
TILT = 0 DEGREES FROM NADIR
MAXIMUM ILLUMINANCE = 2.4 FOOTCANDLES

Footprints (TM) by Philips-Grand Lighting

LUMINAIRE SCHEDULE

SYMBOL	QTY	LABEL	ARRANGEMENT	MODEL	SPECIFICATIONS
■	14	(A)	SINGLE / POLE MOUNTED	E460/E460LEDA	133.48W EURO SERIES FIXTURE, NEXT GEN LED'S, FROSTED BODY LENS, OPTIC TYPE 3



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DEMOLITION AND NEW CONSTRUCTION AT WHEELER PARK FOR THE COUNTY OF UNION

No.	Date	Issue or Revision
1	09.28.17	BID SET

Drawing Title
LIGHTING & LANDSCAPING PLAN

Scale AS INDICATED	USA Project No. 2014-110
Drawing Date 09.28.2017	Drawing No. C-4
Drawn By CVF	Checked By JMB



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SOIL EROSION AND SEDIMENT CONTROL NOTES

- ALL SOIL EROSION AND SEDIMENT CONTROL PRACTICES ARE TO BE INSTALLED PRIOR TO ANY MAJOR SOIL DISTURBANCES, OR IN THEIR PROPER SEQUENCE, AND MAINTAINED UNTIL PERMANENT PROTECTION IS ESTABLISHED.
- ANY DISTURBED AREAS THAT WILL BE LEFT EXPOSED MORE THAN 30 DAYS, AND NOT SUBJECT TO CONSTRUCTION TRAFFIC, WILL IMMEDIATELY RECEIVE A TEMPORARY SEEDING. IF THE SEASON PREVENTS THE ESTABLISHMENT OF A TEMPORARY COVER, THE DISTURBED AREAS WILL BE MULCHED WITH STRAW, OR EQUIVALENT MATERIAL, AT A RATE OF TWO (2) TONS PER ACRE, ACCORDING TO STATE STANDARDS.
- PERMANENT VEGETATION TO BE SEED OR SOILED ON ALL EXPOSED AREAS WITHIN TEN (10) DAYS AFTER FINAL GRADING. MAINTENANCE IS REQUIRED ON ALL SEEDING. WHEN HYDRATED MULCH SHALL NOT BE INCLUDED IN THE TANK WITH THE SEED.
- ALL WORK TO BE DONE IN ACCORDANCE WITH THE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY.
- A SUB-BASE COURSE WILL BE APPLIED IMMEDIATELY FOLLOWING ROUGH GRADING AND INSTALLATION OF IMPROVEMENTS TO STABILIZE STREETS, ROADS, DRIVEWAYS AND PARKING AREAS. IN AREAS WHERE NO UTILITIES ARE PRESENT, THE SUB-BASE SHALL BE INSTALLED WITHIN 10 DAYS OF THE PRELIMINARY GRADING.
- IMMEDIATELY FOLLOWING INITIAL DISTURBANCES OR ROUGH GRADING, ALL CRITICAL AREAS SUBJECT TO EROSION (I.E. STEEP SLOPES AND ROADWAY EMBANKMENTS) WILL RECEIVE A TEMPORARY SEEDING IN CONJUNCTION WITH STRAW MULCH OR A SUITABLE EQUIVALENT, AT A RATE OF TWO (2) TONS PER ACRE, ACCORDING TO STATE STANDARDS.
- ANY STEEP SLOPES REQUIRING PIPELINE INSTALLATION WILL BE BACKFILLED AND STABILIZED DAILY, AS THE INSTALLATION CONTINUES (I.E. SLOPES GREATER THAN 3:1).
- THE STANDARDS FOR STABILIZED CONSTRUCTION ACCESS REQUIRES THE INSTALLATION OF A STONE PAD OF 1 1/2" TO 2" STONE, AT ALL CONSTRUCTION DRIVEWAYS, IMMEDIATELY AFTER INITIAL SITE DISTURBANCE.
- IN ACCORDANCE WITH THE STANDARD FOR MANAGEMENT OF HIGH ACID PRODUCING SOILS, ANY SOIL HAVING A PH OF 4 OR LESS OR CONTAINING IRON SULFIDES SHALL BE COVERED WITH A MINIMUM OF THREE (3) INCHES OF SOIL HAVING A PH OF 5 OR MORE PRIOR TO SEEDING. PREPARATION: ARISE WHERE TREES OR SHRUBS ARE TO BE PLANTED SHALL BE COVERED WITH A MINIMUM OF TWENTY-FOUR (24) INCHES OF SOIL HAVING A PH OF 5 OR MORE.
- THE SOMERSET-UNION SOIL CONSERVATION DISTRICT SHALL BE NOTIFIED IN WRITING 72 HOURS IN ADVANCE OF ANY LAND DISTURBING ACTIVITY.
- AT THE TIME WHEN THE SITE PREPARATION FOR PERMANENT VEGETATION STABILIZATION IS GOING TO BE ACCOMPLISHED, ANY SOIL THAT WILL NOT PRODUCE A SUITABLE ENVIRONMENT TO SUPPORT ADEQUATE VEGETATIVE GROUND COVER IT SHALL BE REMOVED OR TREATED IN SUCH A MANNER THAT WILL PERMANENTLY ADJUST THE SOIL CONDITIONS AND RENDER IT SUITABLE FOR VEGETATIVE GROUND COVER. IF THE REMOVAL OR TREATMENT OF THE SOIL WILL NOT PROVIDE SATISFACTORY CONDITIONS, NON-VEGETATIVE MEANS OF PERMANENT GROUND STABILIZATION WILL HAVE TO BE EMPLOYED.
- IN THAT ALJCSA 434-39 ET SEQ. REQUIRES THAT NO CERTIFICATES OF OCCUPANCY BE ISSUED BEFORE THE PROVISIONS OF THE CERTIFIED PLAN FOR SOIL EROSION AND SEDIMENT CONTROL HAVE BEEN COMPLETED FOR PERMANENT MEASURES, ALL SITE WORK FOR SITE PLANS AND ALL WORK AROUND INDIVIDUAL LOTS OR PARCELS, WILL HAVE TO BE COMPLETED PRIOR TO THE DISTRICT ISSUING A REPORT OF COMPLIANCE FOR THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY BY THE MUNICIPALITY.
- CONDUIT OUTLET PROTECTION MUST BE INSTALLED AT ALL REQUIRED OUTFALLS PRIOR TO THE DRAINAGE SYSTEM BECOMING OPERATIONAL.
- ANY CHANGES TO THE CERTIFIED SOIL EROSION AND SEDIMENT CONTROL PLANS WILL REQUIRE THE SUBMISSION OF REVISED SOIL EROSION AND SEDIMENT CONTROL PLANS TO THE DISTRICT FOR RE-CERTIFICATION. THE REVISED PLANS MUST MEET ALL CURRENT STATE SOIL EROSION AND SEDIMENT CONTROL STANDARDS.
- UNFILTERED DRAINAGE IS NOT PERMITTED. TAKE ALL NECESSARY PRECAUTIONS DURING ALL DRAINAGE OPERATIONS TO MINIMIZE SEDIMENT TRANSFER. ANY DRAINAGE METHODS USED MUST BE IN ACCORDANCE WITH STATE STANDARDS.
- SHOULD THE CONTROL OF DUST AT THE SITE BE NECESSARY, THE SITE WILL BE SPRINKLED UNTIL THE SURFACE IS WET. TEMPORARY VEGETATIVE COVER SHALL BE ESTABLISHED OR MULCH SHALL BE APPLIED IN ACCORDANCE WITH STATE STANDARDS FOR SOIL EROSION CONTROL.
- ALL SOIL WASHED, DROPPED, SPILLED, OR TRACKED OUTSIDE THE LIMIT OF DISTURBANCE OR ONTO PUBLIC RIGHT-OF-WAY WILL BE REMOVED IMMEDIATELY.
- THE PROPERTY OWNER SHALL BE RESPONSIBLE FOR ANY EROSION OR SEDIMENTATION THAT MAY OCCUR BEFORE STORM WATER OUTFALLS OR OFF SITE AS A RESULT OF CONSTRUCTION OF THE PROJECT.
- STOOPPLE AND STAGING LOCATIONS DETERMINED IN THE FIELD, SHALL BE PLACED WITHIN THE LIMIT OF DISTURBANCE ACCORDING TO THE CERTIFIED PLAN. STAGING AND STOOPPLES NOT DETERMINED WITHIN THE LIMIT OF DISTURBANCE WILL REQUIRE CERTIFICATION OF A REVISED SOIL EROSION AND SEDIMENT CONTROL PLAN. THE DISTRICT RESERVES THE RIGHT TO DETERMINE WHEN CERTIFICATION OF A NEW AND SEPARATE SOIL EROSION AND SEDIMENT CONTROL PLAN WILL BE REQUIRED FOR THESE ACTIVITIES.
- ALL SOIL STOOPPLES AREA TO BE TEMPORARILY STABILIZED IN ACCORDANCE WITH SOIL EROSION AND SEDIMENT CONTROL, NOTE #2.

STANDARD FOR STABILIZATION WITH MULCH ONLY
(REVISED PER "NJ STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL" 7th EDITION, JANUARY 2014)

- METHODS AND MATERIALS**
- I. SOIL PREPARATIONS:**
- GRADE AS NEEDED AND FEASIBLE, TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDING PREPARATION. SEEDING, MULCH APPLICATION AND MULCH ANCHORING. ALL GRADING SHOULD BE DONE IN ACCORDANCE WITH STANDARDS FOR LAND GRADING.
 - INSTALL NEEDED EROSION CONTROL PRACTICES OR FACILITIES SUCH AS DIMENSIONED, GRASS STABILIZATION STRUCTURES, CHANNEL STABILIZATION MEASURES, SEDIMENT BASINS, AND WATERWAYS. (SEE STANDARDS 11 THROUGH 42).
- II. PROTECTIVE MATERIALS:**
- UNRITTED SMALL-GRAIN STRAW, AT 2.0 TO 2.5 TONS PER ACRE, IS SPREAD UNIFORMLY AT 90 TO 115 POUNDS PER 1,000 SQUARE FEET AND ANCHORED WITH A WOOD ANCHORING TOOL, LIQUID MULCH BINDER, OR NEEDING THE DOWN. OTHER SUITABLE MATERIALS MAY BE USED IF APPROVED BY THE SOIL CONSERVATION DISTRICT. THE APPROVED RATES ABOVE HAVE BEEN MET WITH THE MOUND COVERING THE GROUND COMPLETELY UPON INSPECTION, I.E. THE SOIL CANNOT BE SEEN BELOW THE MULCH.
 - (ELIMINATED FROM 7th EDITION, JANUARY 2014)
 - SYNTHETIC OR ORGANIC SOIL STABILIZERS MAY BE USED UNDER SUITABLE CONDITIONS AND IN QUANTITIES AS RECOMMENDED BY THE MANUFACTURER.
 - WOOD-FIBER OR PAPER-FIBER MULCH AT THE RATE OF 1,500 POUNDS PER ACRE (OR ACCORDING TO THE MANUFACTURER'S REQUIREMENTS) MAY BE APPLIED BY A HYDRATEDER.
 - MULCH NETTING, SUCH AS PAPER JUTE, EXCESSOR, COTTON, PLASTIC, MAY BE USED.
 - WOODCHIPS APPLIED UNIFORMLY TO A MINIMUM DEPTH OF 2 INCHES MAY BE USED. WOODCHIPS WILL NOT BE USED ON AREAS WHERE FLOWING WATER COULD WASH THEM INTO AN INLET AND PLUG IT.
 - GRAVEL CRUSHED STONE, OR SLAG AT THE RATE OF 9 CUBIC YARDS PER 1,000 SQ. FT. APPLIED UNIFORMLY TO A MINIMUM DEPTH OF 3 INCHES MAY BE USED. SIZE 2 OR 3 (ASTM C-33) IS RECOMMENDED.
- III. MULCH ANCHORING:**
- SHOULD BE ACCOMPLISHED IMMEDIATELY AFTER PLACEMENT OF MULCH TO MINIMIZE LOSS OF WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS, DEPENDING UPON THE SIZE OF THE AREA AND STEEPNESS OF SLOPES.
 - SEE AND DRIVE: DRIVE 8 TO 10 INCH WOODEN PEGS TO WITHIN 2 TO 3 INCHES OF THE SOIL SURFACE EVERY 4 FEET IN ALL DIRECTIONS. STAKES MAY BE DRIVEN BEFORE OR AFTER APPLYING MULCH. SECURE MULCH TO SOIL SURFACE BY STRETCHING TWINE BETWEEN PEGS IN A CROSS-CROSS AND A SQUARE PATTERN. SECURE TWINE AROUND EACH PEG WITH TWO MORE ROUND TWINE.
 - MULCH NETTING: STAPLE PAPER, COTTON, OR PLASTIC NETTINGS OVER MULCH. USE A DEGRADABLE NETTING IN AREAS TO BE MOWED. NETTING IS USUALLY AVAILABLE IN ROLLS 4 FEET WIDE AND UP TO 300 FEET LONG.
 - ANCHOR MULCH ANCHORING COLLATERAL TOOLS: A TRACTOR-DRAWN IMPLEMENT ESPECIALLY DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE SURFACE. THIS PRACTICE AFFORDS MAXIMUM EROSION CONTROL, BUT ITS USE IS LIMITED TO THOSE SLOPES UPON WHICH THE TRACTOR CAN OPERATE SAFELY. SOIL PENETRATION SHOULD BE DONE ABOUT 3 TO 4 INCHES ON SLOPING LAND, AND WEATHER CONDITIONS RECOMMENDED BY THE MANUFACTURER.
 - LIQUID MULCH-BINDERS:
 - APPLICATIONS SHOULD BE HEAVIER AT EDGES WHERE WIND CATCHES THE MULCH, IN VALLEYS, AND AT CRESTS OR BANKS. REMAINDER OF AREA SHOULD BE UNIFORM IN APPEARANCE.
 - USE ONE OF THE FOLLOWINGS:
 - ORGANIC AND VEGETABLE BASED BINDERS - NATURALLY OCCURRING, POWDER BASED, HYDROPHILIC MATERIALS THAT MIXED WITH WATER FORMULATES A GEL AND WHEN APPLIED TO MULCH UNDER SATISFACTORY CURING CONDITIONS WILL FORM MEMBRANE NETWORKS OF INSOLUBLE POLYMERS. THE VEGETABLE GEL SHALL BE PHYSIOLOGICALLY HARMLESS AND NOT RESULT IN A PHYTOLOGIC EFFECT OR UNLIMTED GROWTH OF TURFGRASS. VEGETABLE BASED GELS SHALL BE APPLIED AT RATES AND WEATHER CONDITIONS RECOMMENDED BY THE MANUFACTURER.
 - SYNTHETIC BINDERS - HIGH POLYMER SYNTHETIC EMULSION, MISCIBLE WITH WATER WHEN DILUTED AND FOLLOWING APPLICATION TO MULCH, DRYING AND CURING SHALL NO LONGER BE SOLUBLE OR DISPERSIBLE IN WATER. IT SHALL BE APPLIED AT RATES AND WEATHER CONDITIONS RECOMMENDED BY THE MANUFACTURER AND REMAIN TACKLY UNTIL GERMINATION OF GRASS.

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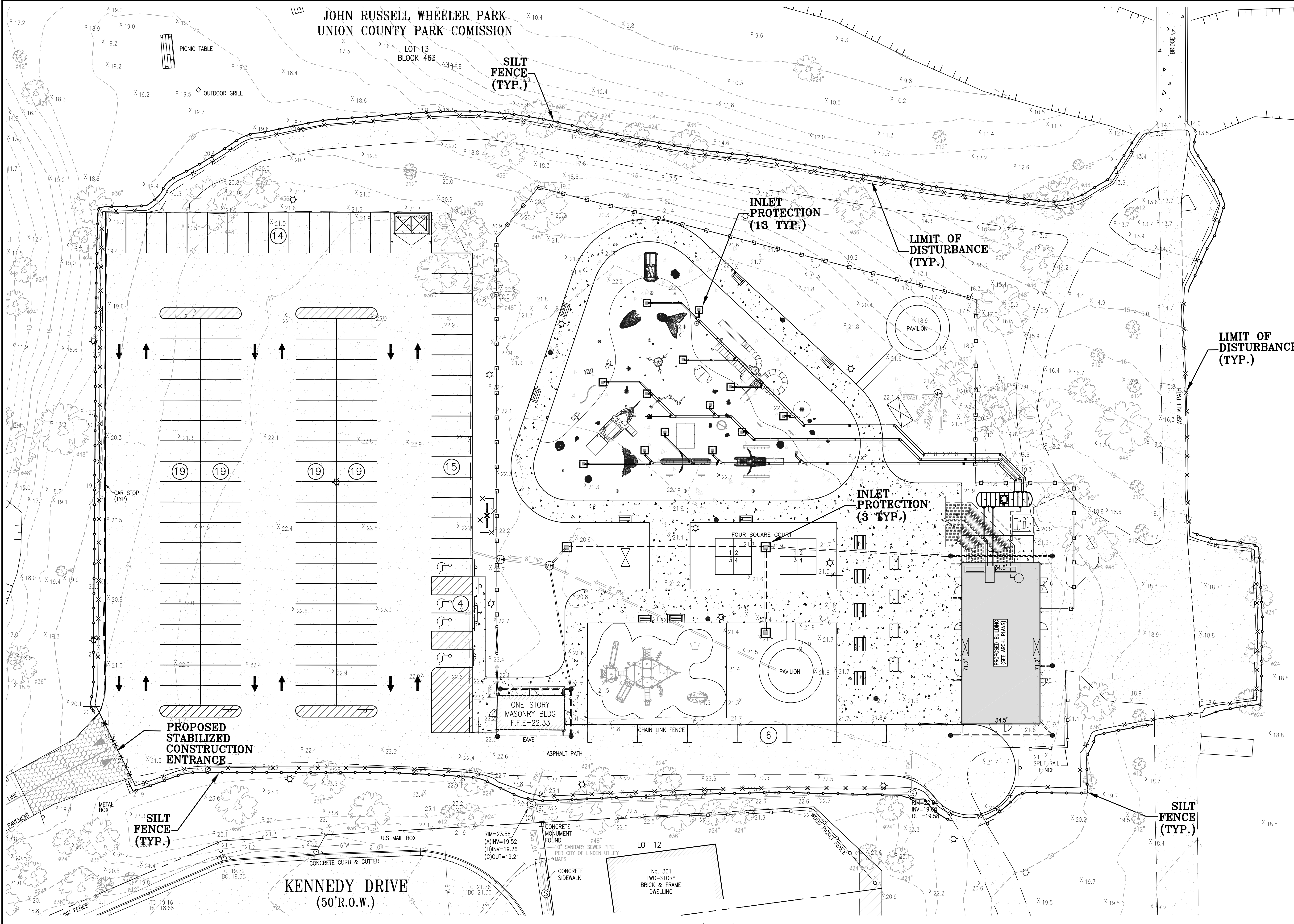
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DEMOLITION AND NEW CONSTRUCTION AT WHEELER PARK FOR THE COUNTY OF UNION

1 09.26.17 BID SET

SOIL EROSION AND SEDIMENT CONTROL PLAN

Scale: AS INDICATED USA Project No. 2014-110
Drawing Date: 09.26.2017 Drawing No.
Drawn By: CVF Checked By: JMB PROJECT No. 2014059.05



SEQUENCE OF CONSTRUCTION OPERATIONS

ACTIVITY	TIME ESTIMATED
1. Install silt fence.	1 Day
2. Demolish existing structures and associated improvements.	1 Week
3. Strip topsoil, stockpile and stabilize.	2 Days
4. Excavate and remove.	3 Weeks
5. Back fill Foundation, rough grade site and apply temporary seeding and/or mulch as required.	3 Days
6. Begin reconstruction.	1 Year
7. Install underground utilities.	2 Weeks
8. Install services walkways and pave driveway.	3 Days
9. Finish grading site and apply permanent stabilization measures.	1 Week
10. Remove temporary soil erosion control measures.	1 Day
11. Complete Building and Landscaping.	2 Weeks

ALL ROADS AND WALKWAYS WILL BE SWEEP DAILY THROUGHOUT THE DURATION OF CONSTRUCTION.

SCALE 1" = 20'

SEEDING SCHEDULE

- (REVISED PER "NJ STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL" 7th EDITION, JANUARY 2014)
- REMOVE FROM THE SURFACE ALL STONES TWO INCHES OR LARGER IN ANY DIMENSION, REMOVE ALL OTHER DEBRIS, SUCH AS WIRE, CABLE, TREE ROOTS, PIECES OF CONCRETE, CLOS, LUMPS OR OTHER UNSUITABLE MATERIAL.
 - INSPECT SEEDBED JUST BEFORE SEEDING. IF TRAFFIC HAS LEFT SOIL COMPACTED, THE AREA MUST BE RETILLED AND FIRMED AS ABOVE.
 - TEMPORARY SEEDING SHALL CONSIST OF SPRING GRASS APPLIED AT A RATE OF 2.0 LBS. PER 1,000 SF OR GRASS PEE APPLIED AT A RATE OF 2.4 LBS. PER 1,000 SF. TEMPORARY SEEDING TO BE MAINTAINED UNTIL DISTURBED AREAS ARE PERMANENTLY STABILIZED WITH PERMANENT SEEDING. IF ANY SERIOUS EROSION PROBLEM OCCURS, THE ERODED AREAS SHALL BE REPAIRED AND STABILIZED WITH A MULCH AS INDICATED IN NOTE 6.
 - PERMANENT SEEDING SHALL CONSIST OF THE FOLLOWING MIXTURE OR APPROVED EQUAL. SITE CONTAINS SOIL: HALLOM-URBAN LAND-ROSBROOK COMPLEX, 0 TO 8 PERCENT SLOPES CLASSIFIED AS "SOMEWHAT POORLY DRAINER" AS PER NJ WEB SOIL SURVEY USA.

PLANTING MIXTURE TO BE USED: MIX-16 (RESIDENTIAL/COMMERCIAL USE)
ROUGH BULBOUSNESS @ 90 lb/Ac.
STRONG CHEERING RED FESCUE @ 130 lb/Ac.

SOIL IS LOCATED WITHIN USDA PLANT HARDINESS ZONE 6b. PLANTING DATES:
ACCEPTABLE DATE: 3/01 TO 4/30
ACCEPTABLE DATE: 5/01 TO 6/14 (**)
OPTIMAL DATE: 8/15 TO 10/15

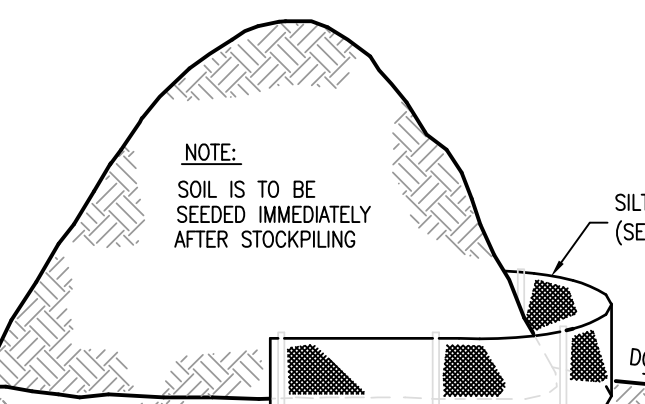
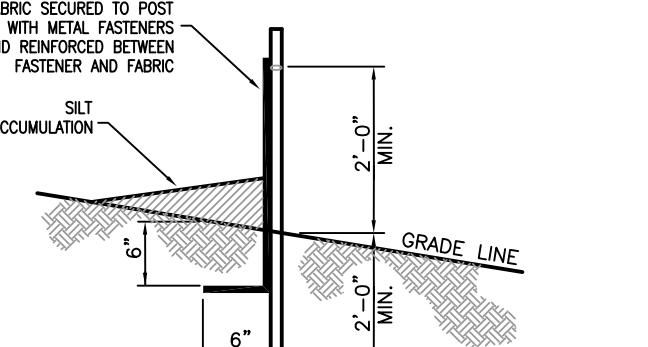
**HYDRATED MULCH SEEDING SHALL BE CONDUCTED WHEN THE SITE IS UNGRADED AND BEFORE ANY SEEDING TO ENSURE ESTABLISHMENT BEFORE FUTURE CONSTRUCTION.
 - "PERMANENT SEEDING TO BE APPLIED BY CYCLONE SPREADER OR OTHER APPROVED METHOD, AT A RATE OF 150#/ACRE. SLOPED AREA TO BE COVERED WITH MULCH AS INDICATED IN NOTE 6".
 - FERTILIZER FOR THE ESTABLISHMENT OF TEMPORARY AND PERMANENT VEGETATIVE COVER SHALL BE 10-20-10 APPLIED AT A RATE OF 11#/1000 SF OR AS DETERMINED BY SOIL TESTS. LIMESTONE FOR TEMPORARY SEEDING SHALL BE APPLIED AT A RATE OF 90#/1000SF. LIMESTONE FOR PERMANENT SEEDING SHALL BE APPLIED AT A RATE OF 130#/1000 SF.
 - IF SEASON PREVENTS THE ESTABLISHMENT OF TEMPORARY OR PERMANENT SEEDING, EXPOSED AREA TO BE STABILIZED WITH MULCH.
 - ALL SEEDED AREAS SHALL BE MULCHED. MULCH SHALL CONSIST OF SMALL GRASS STRAW OR SALT WY ANCHORED WITH A WOOD AND FIBER MULCH BINDER, LIQUID MULCH BINDER, OR AN APPROVED EQUAL AT A RATE OF 70-90 LBS. PER 1000 SF.

DIG SAFELY - NEW JERSEY

CALL BEFORE YOU DIG
1-800-272-1000
IT'S THE LAW

Dig Safely

NEW JERSEY ONE CALL
CONTRACTORS SHALL CALL 1-800-272-1000
MINIMUM THREE DAYS NOTICE PRIOR TO BEGINNING EXCAVATION



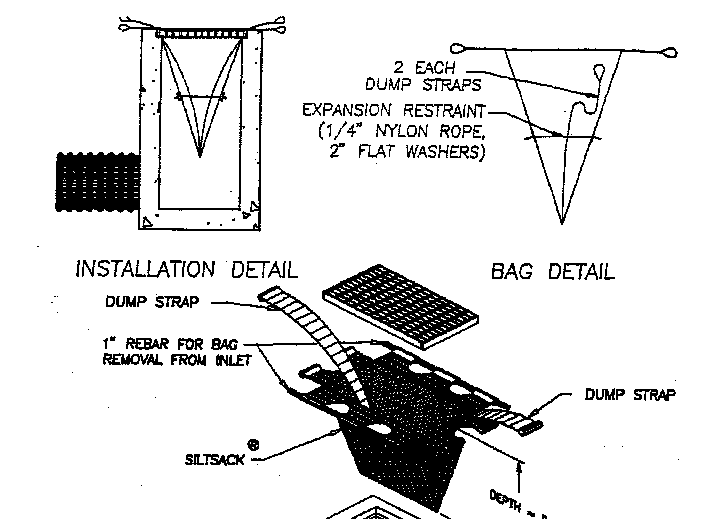
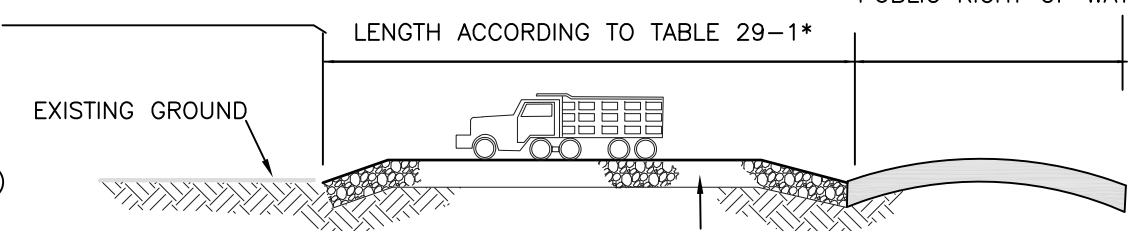
- LEGEND**
- STREET SIGN
 - CLEANOUT
 - SANITARY MANHOLE
 - DRAINAGE MANHOLE
 - CATCH BASIN
 - GULY BORING
 - SOIL WIRE
 - UTILITY POLE
 - P.K. NAL FOUND
 - CONC. MONUMENT FOUND
 - IRON BAR FOUND
 - MALIBOX
 - STREET TREE
 - EXIST. SPOT ELEVATION
 - EXISTING CONTOUR LINE
 - GAS LINE
 - WATER LINE
 - GAS VALVE
 - WATER VALVE
 - FIRE HYDRANT
 - LIGHT POST

THIS PLAN IS ONLY TO BE USED AS A GUIDE TO THE IMPLEMENTATION OF SOIL EROSION CONTROL MEASURES. IT IS NOT TO BE USED FOR CONSTRUCTION. REFER TO PLOT PLAN AND SUPPLEMENTS THERETO.

Table 29-1: Lengths of Construction Exits on Sloping Roadbeds

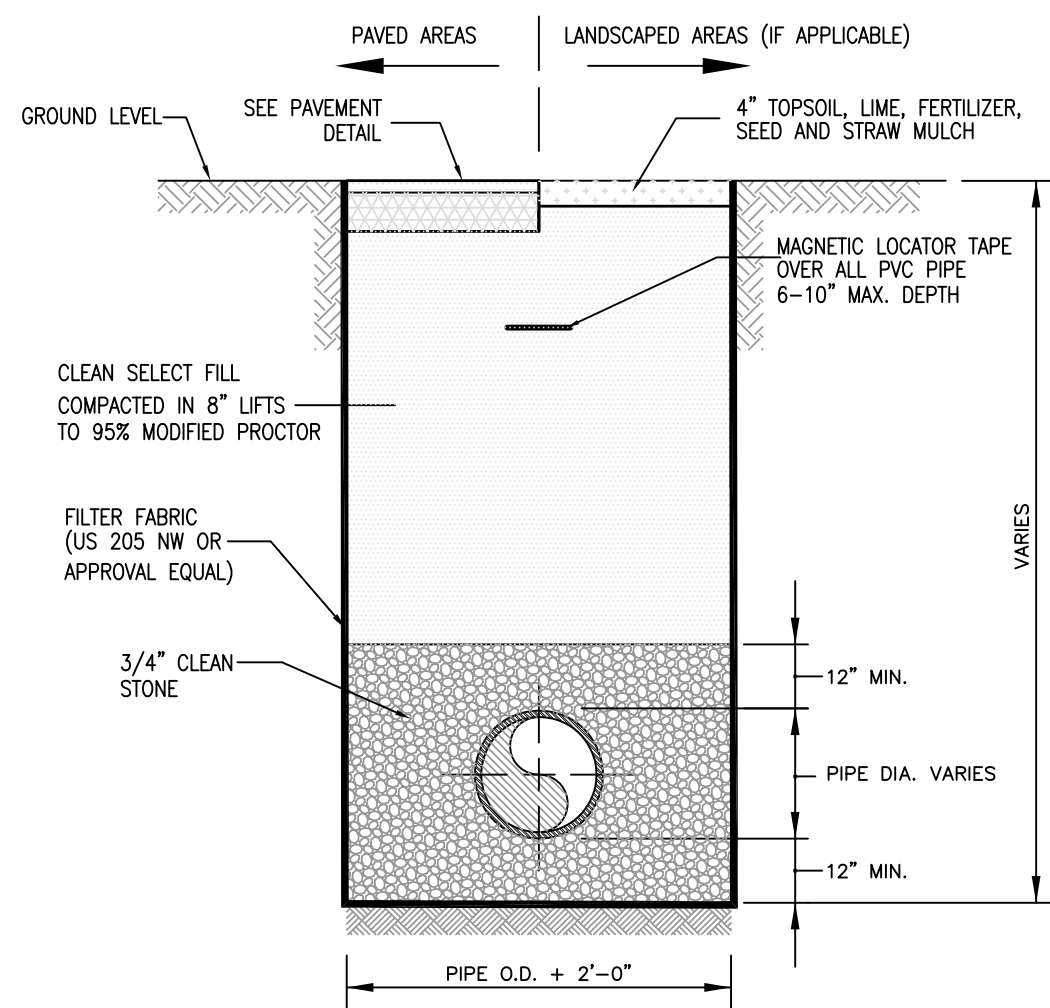
Percent Slope of Roadway	Length of Stone Required
0 to 2%	Coarse Grained Soils: 100 ft. Fine Grained Soils: 150 ft.
2 to 5%	Coarse Grained Soils: 200 ft. Fine Grained Soils: 300 ft.
5 to 8%	Coarse Grained Soils: 300 ft. Fine Grained Soils: 450 ft.

1. As prescribed by local ordinance or other governing authority.
2. NOTE: INDIVIDUAL LOT ACCESS POINTS MAY REQUIRE STABILIZATION. THICKNESS SHOWN IS FOR STONE CONSTRUCTION ENTRANCE ONLY (TYP.)



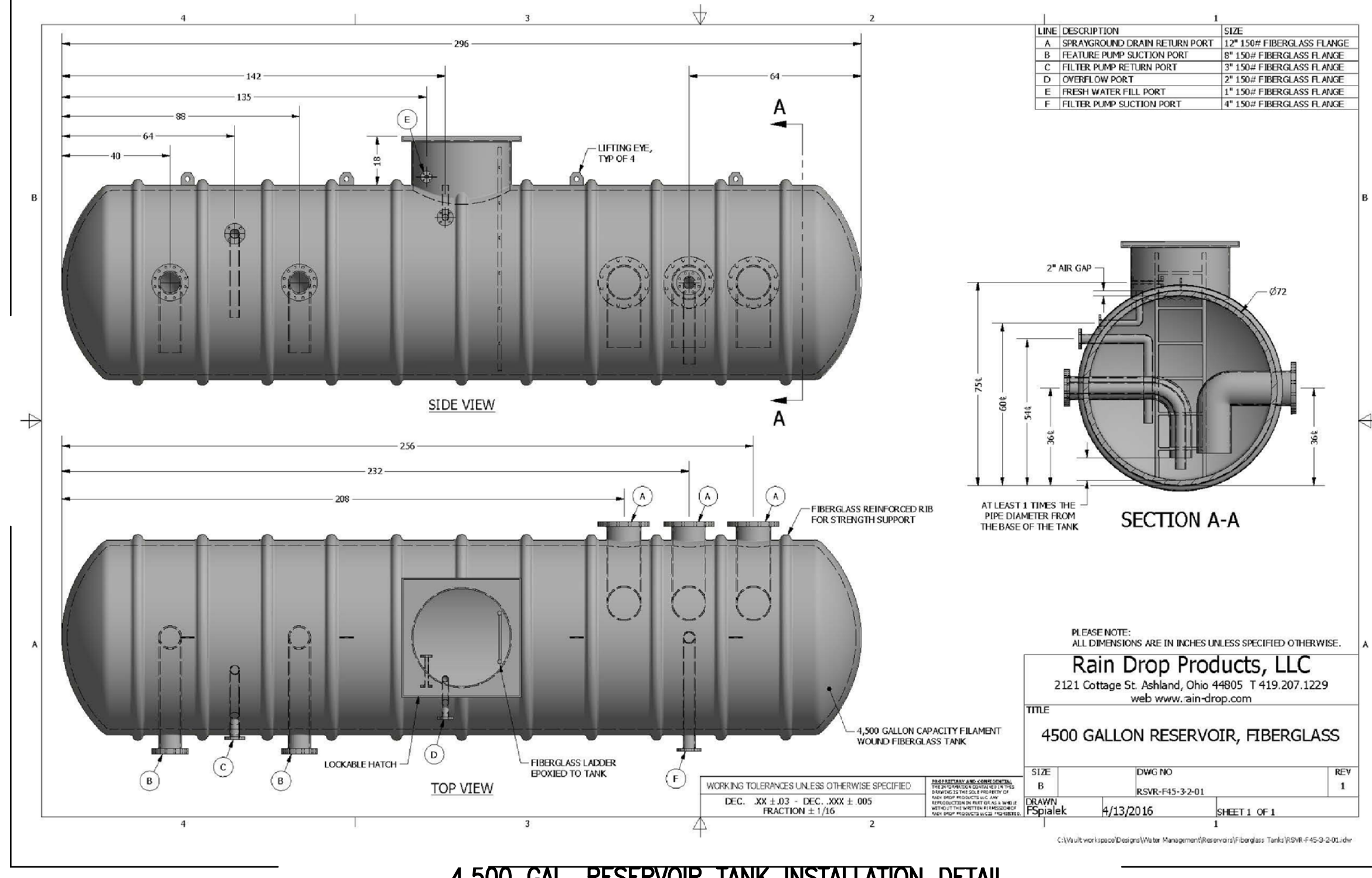
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NEW JERSEY LICENSE NO. 34460
CERTIFICATE OF AUTHORIZATION NO. 240A27962100 PROJECT No. 2014059.05



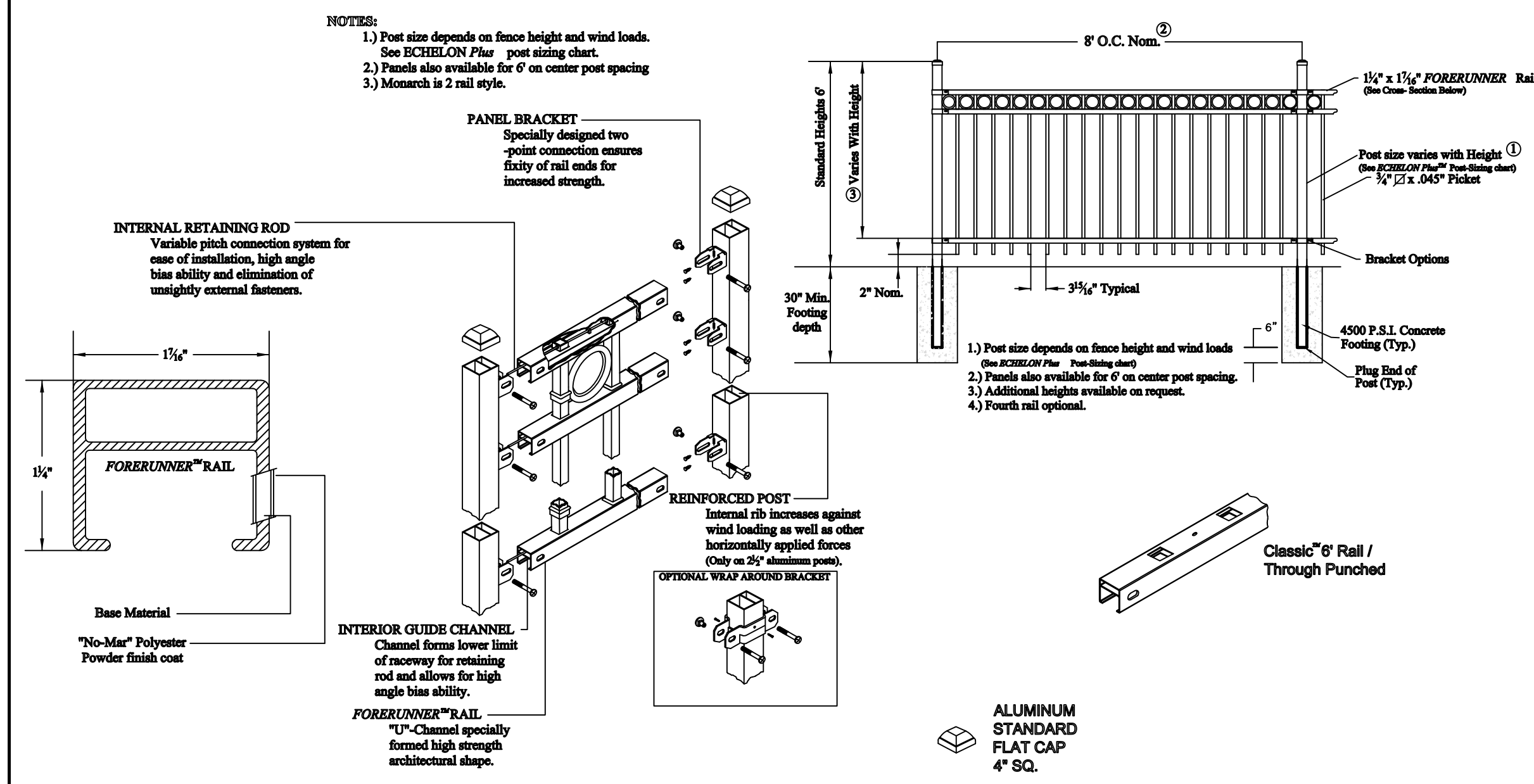
- NOTES:**
- WHERE THE SEWER IS PLACED IN EXISTING OR FUTURE RIGHT-OF-WAY, BACKFILL SHALL BE MECHANICALLY TAMPED IN LAYERS NOT TO EXCEED 12" IN THICKNESS.
 - SHEETING WILL BE USED WHEN REQUIRED BY THE CONSTRUCTION SAFETY CODE OF THE STATE OF NEW JERSEY AND OSHA.
 - ALL BACKFILL MATERIAL IS TO BE PLACED AND COMPACTED IN 8" LIFTS TO 95% MODIFIED PROCTOR.
 - DGA SHALL BE ON OF THE FOLLOWING, AS PROVIDED BY THE ENGINEER: DENSE GRADED AGGREGATE, QUARRY PROCESS STONE, 3/4" DIRTY ROAD STONE.
 - DRAINER TRENCH AS REQUIRED DURING PIPE INSTALLATION.

TRENCH DETAIL
NOT TO SCALE

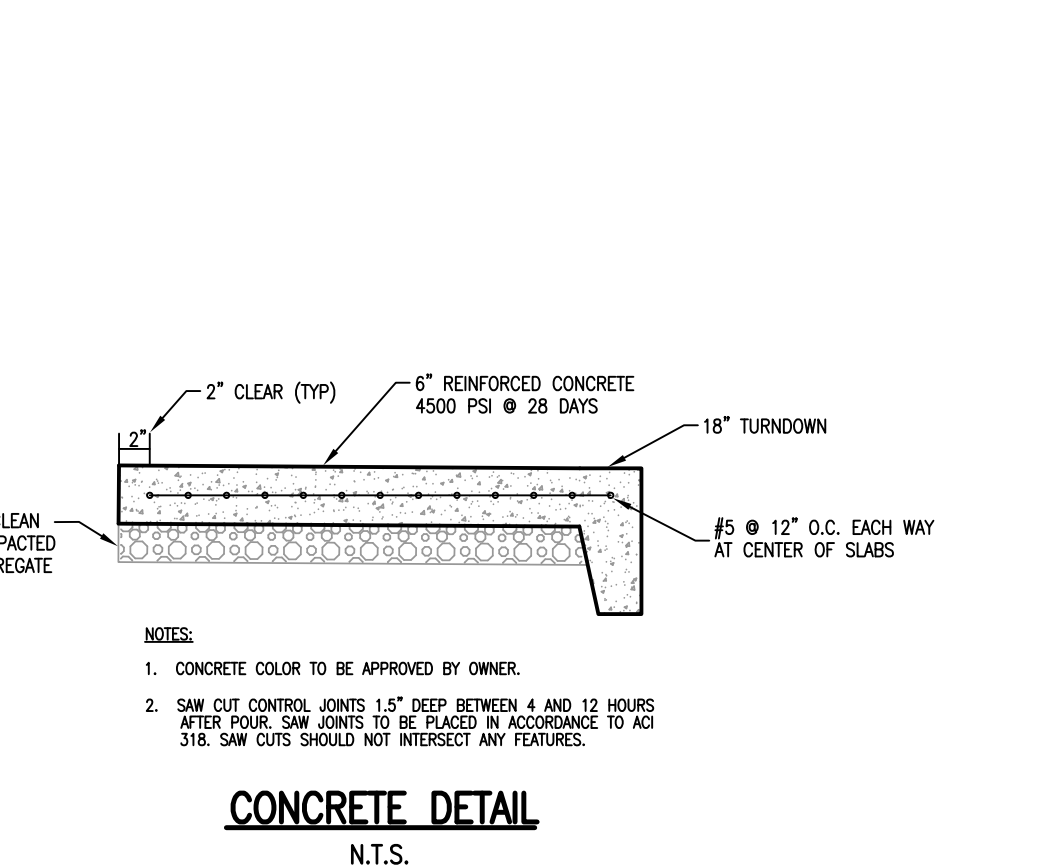


4,500 GAL. RESERVOIR TANK INSTALLATION DETAIL
NOT TO SCALE

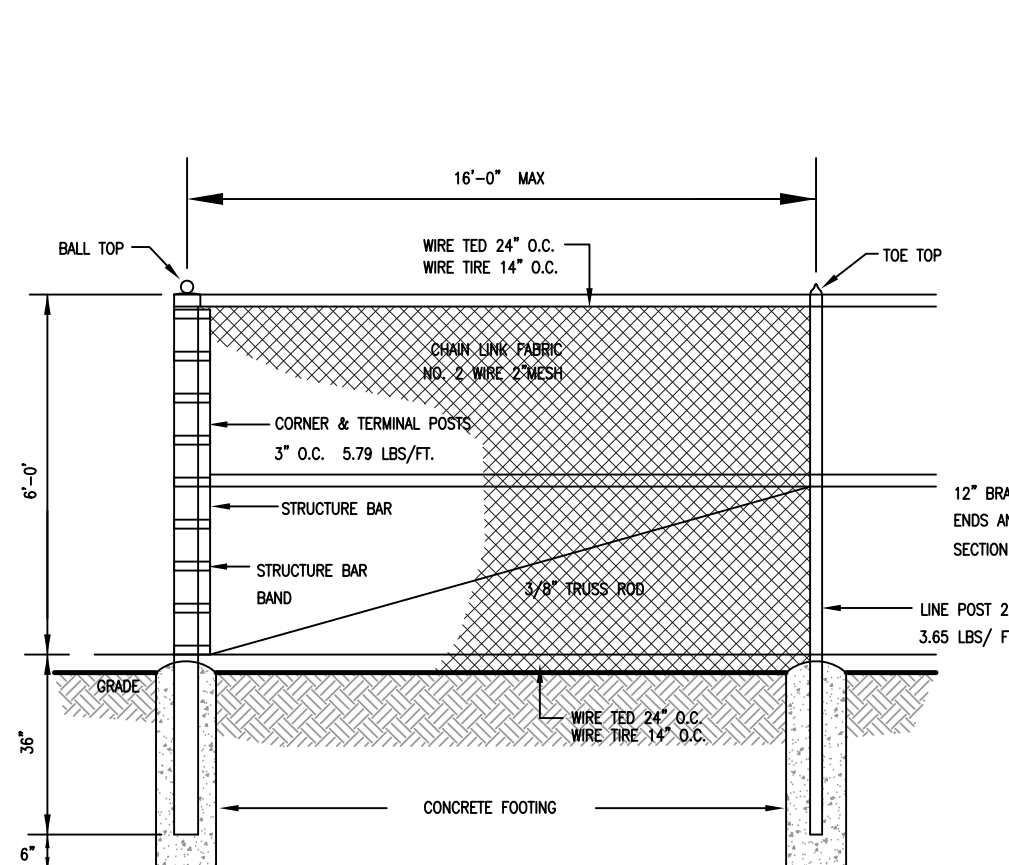
NOTE: THE RESERVOIR TANK WILL BE PURCHASED BY THE COUNTY AND INSTALLED BY THE GENERAL CONTRACTOR. (REFER TO ARCHITECTURAL PLANS FOR FURTHER INFORMATION)



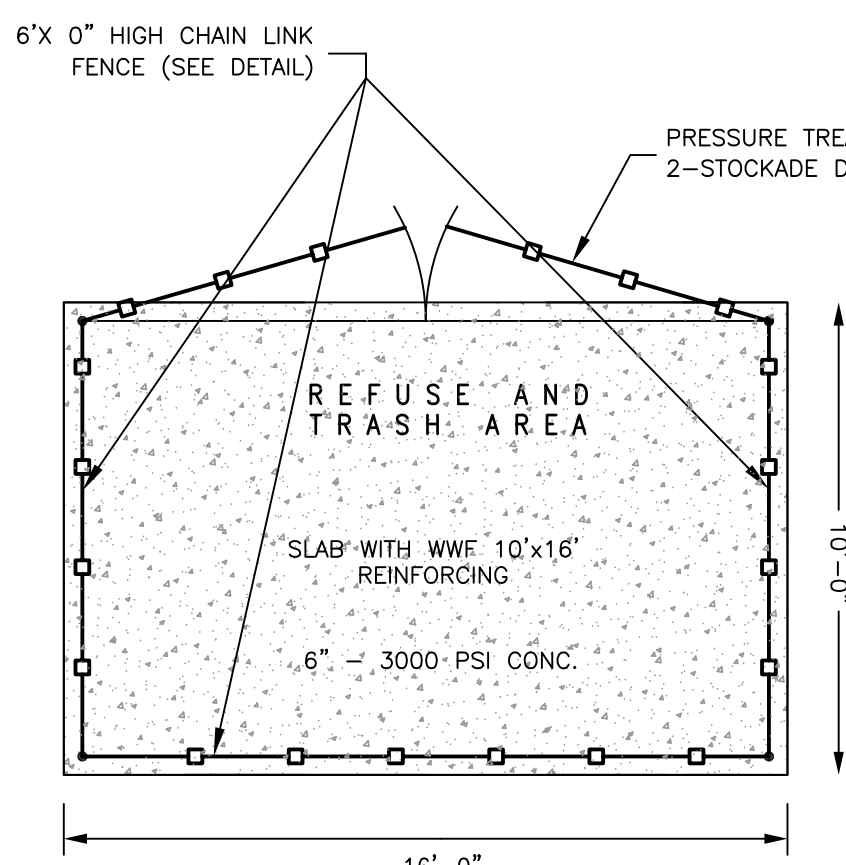
ALUMINUM ORNAMENTAL FENCE DETAIL
N.T.S.



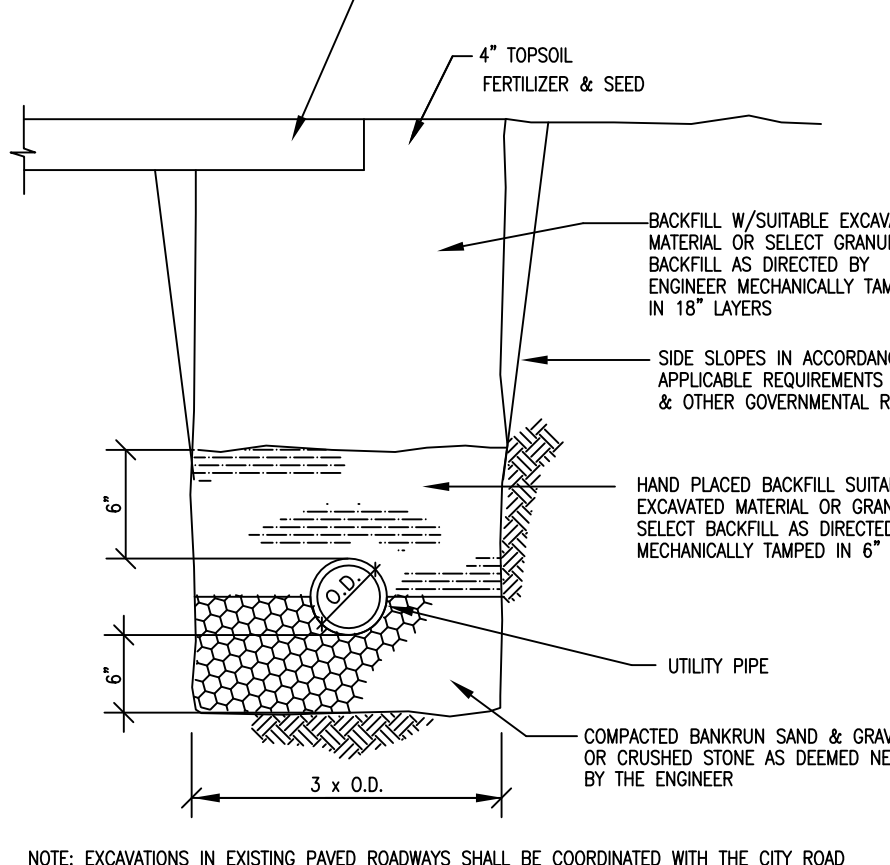
CONCRETE DETAIL
N.T.S.



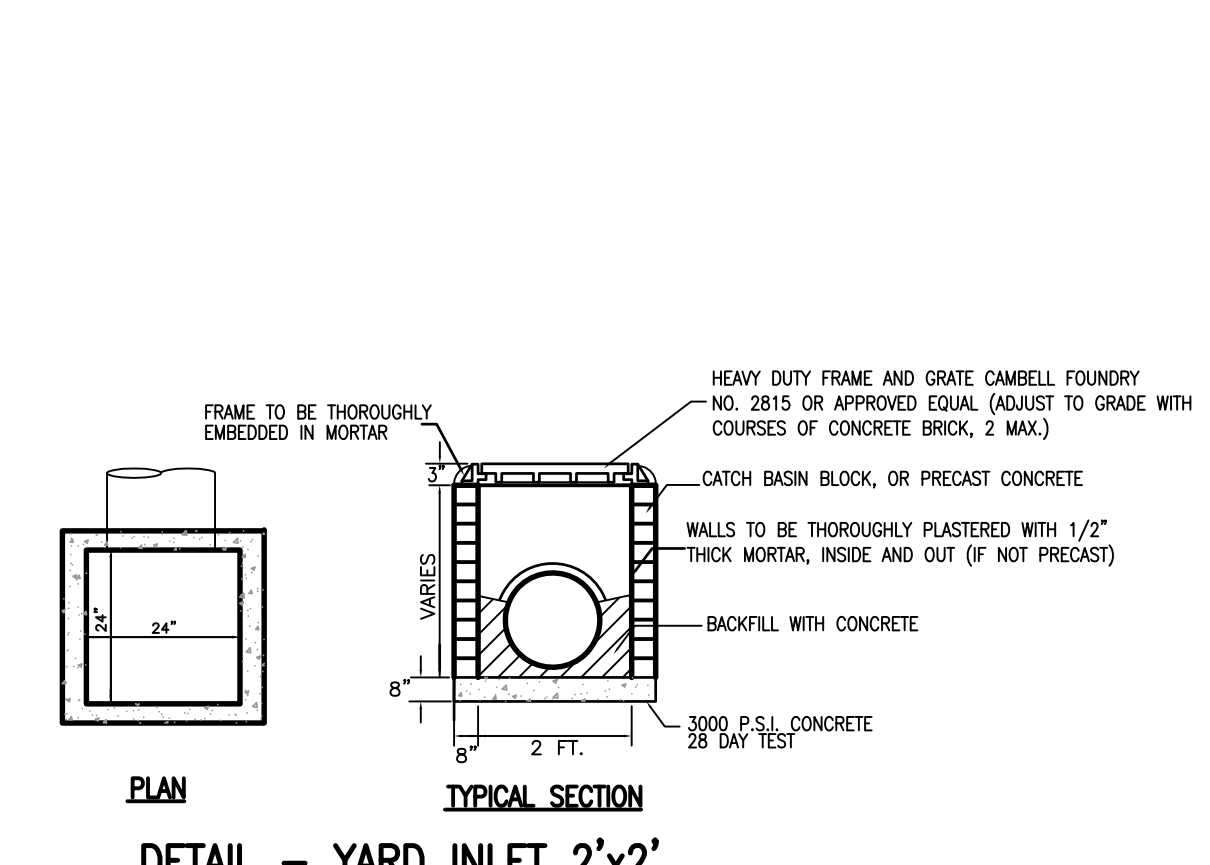
6' CHAIN LINK FENCE DETAIL
FOR REFERENCE ONLY
N.T.S.



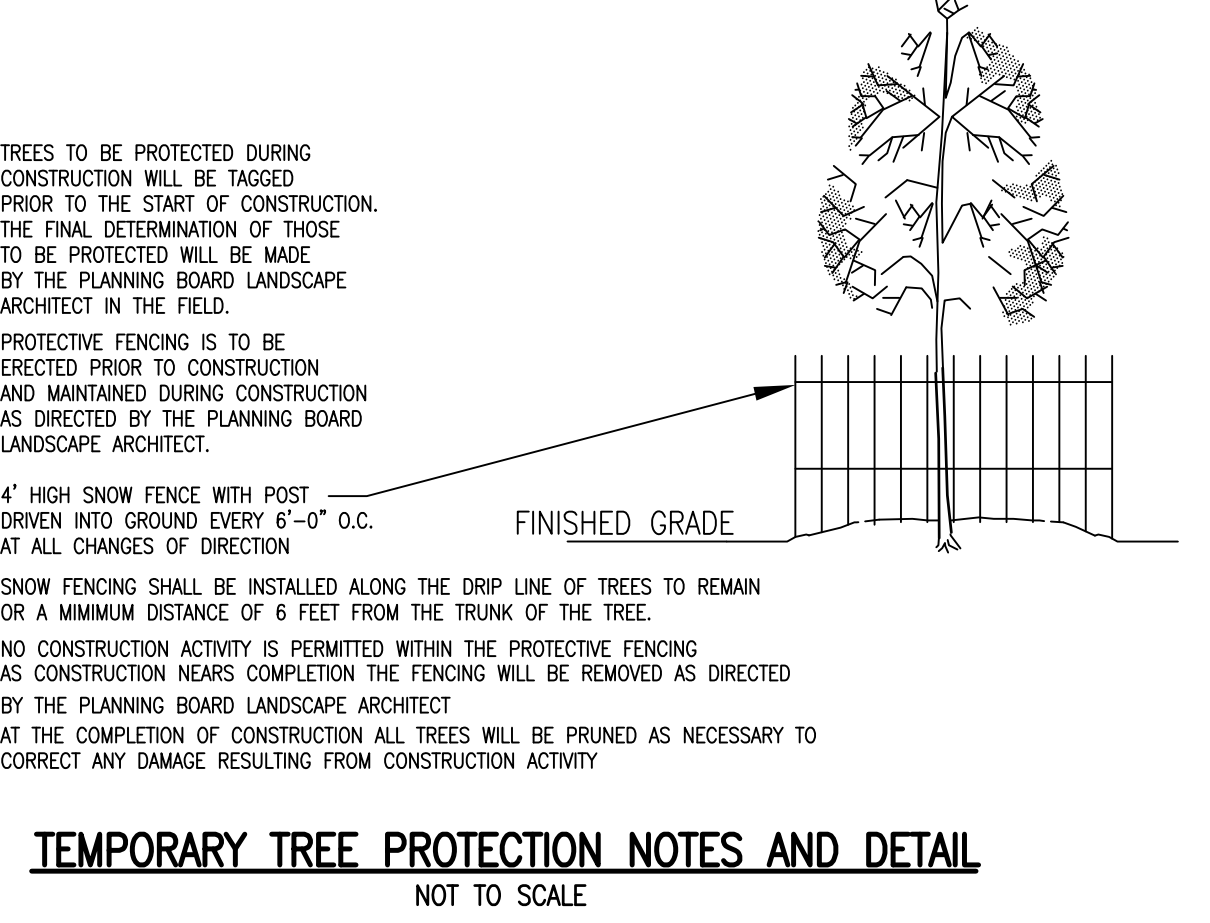
DUMPSTER ENCLOSURE DETAIL
N.T.S.



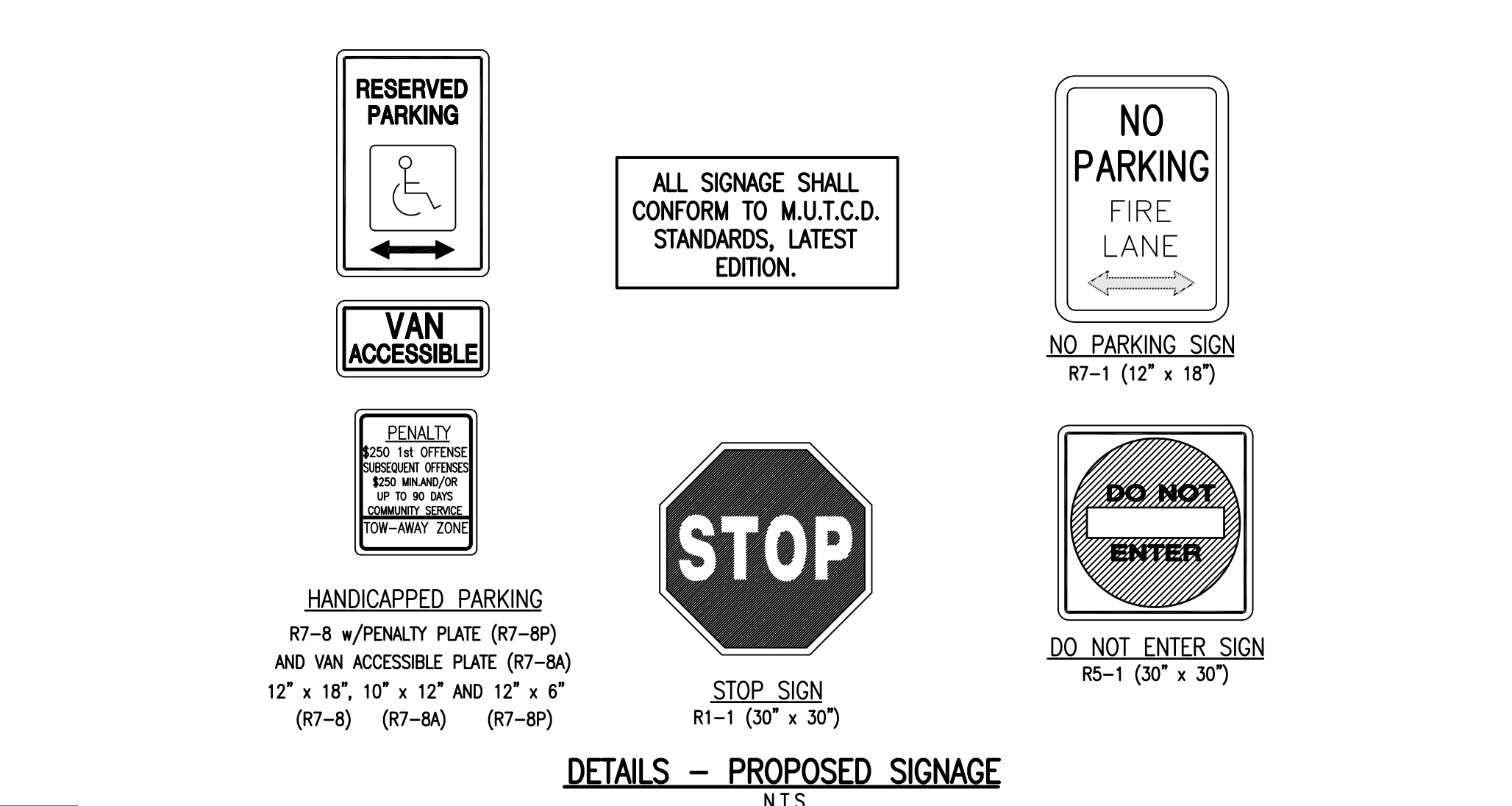
TYPICAL UTILITY TRENCH DETAIL
N.T.S.



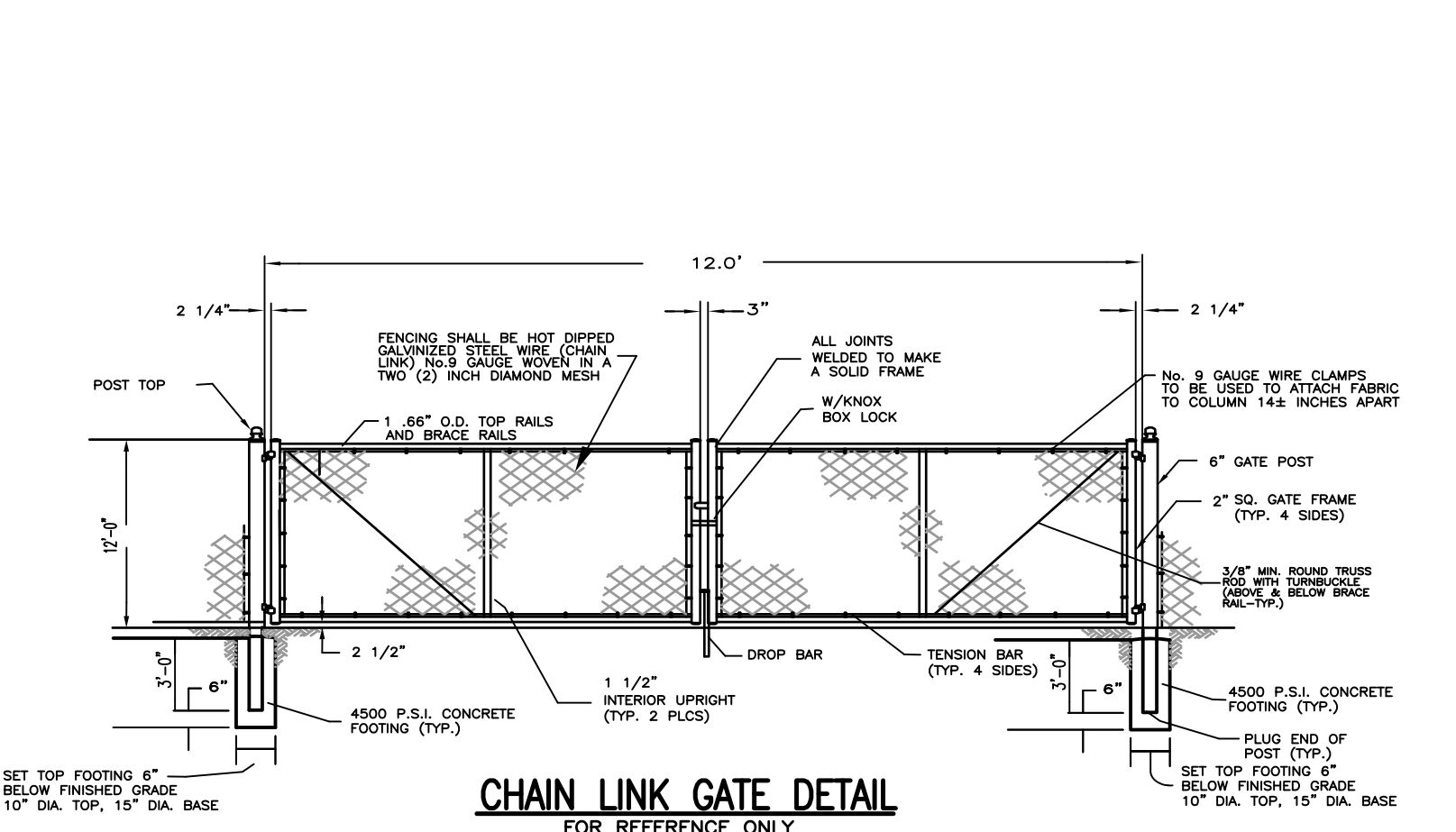
DETAIL - YARD INLET 2'x2'
N.T.S.



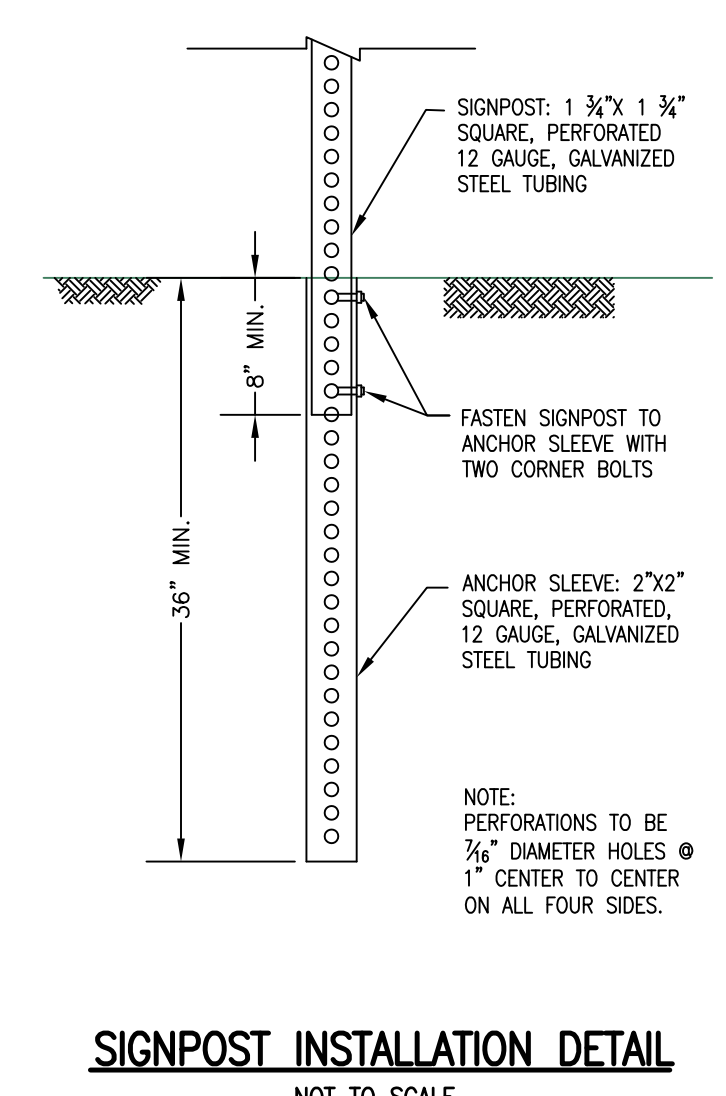
TEMPORARY TREE PROTECTION NOTES AND DETAIL
NOT TO SCALE



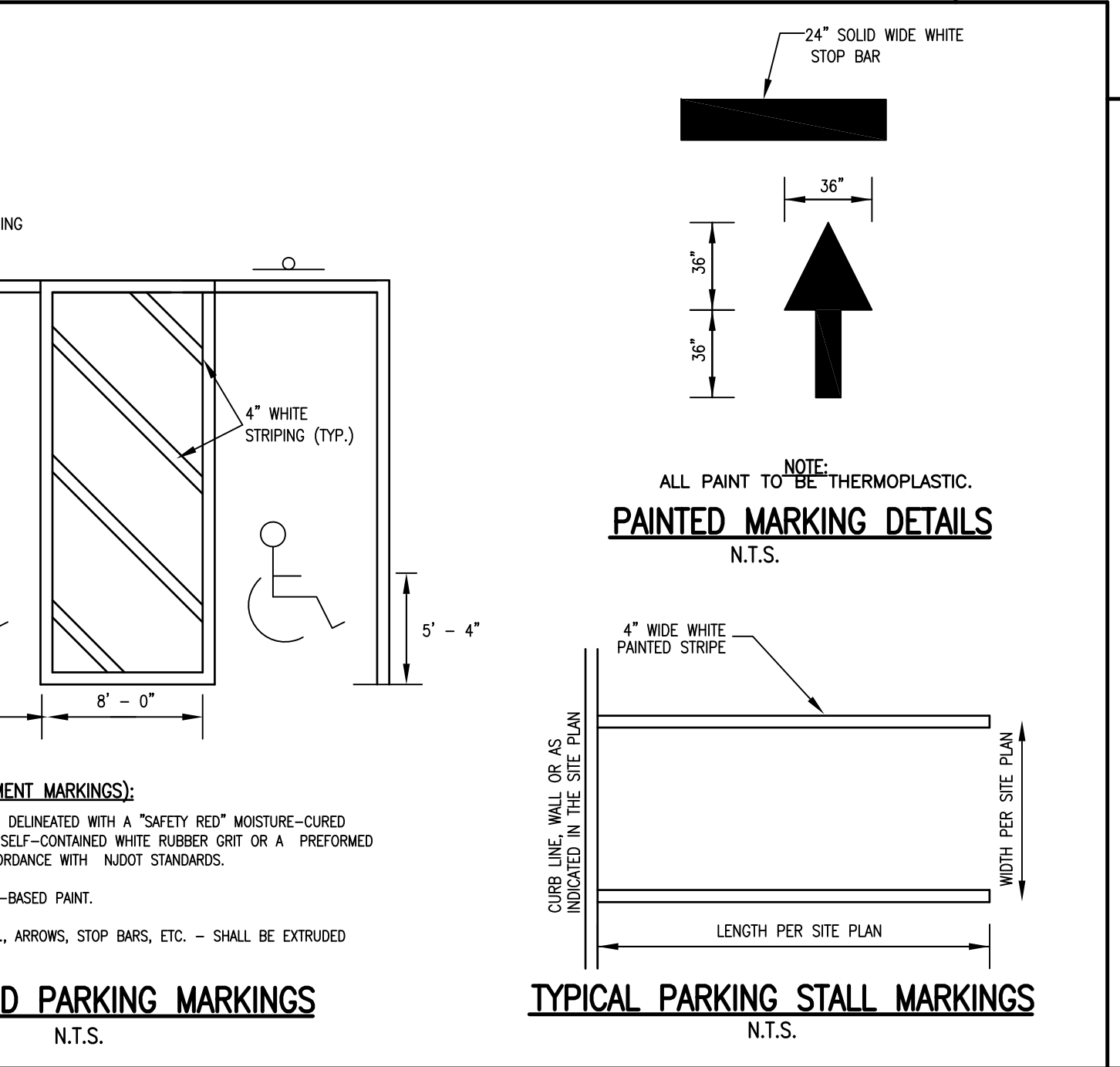
DETAILS - PROPOSED SIGNAGE
N.T.S.



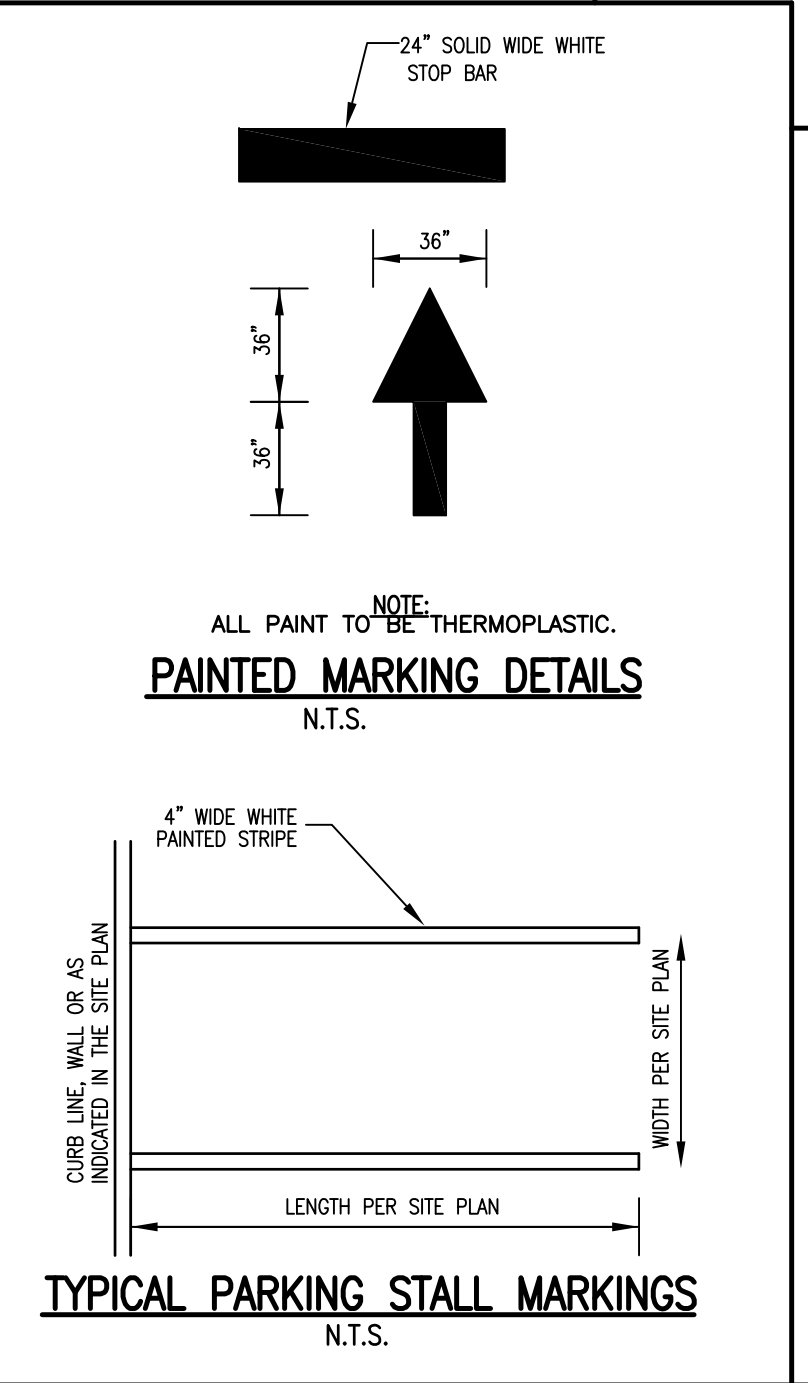
CHAIN LINK GATE DETAIL
FOR REFERENCE ONLY
N.T.S.



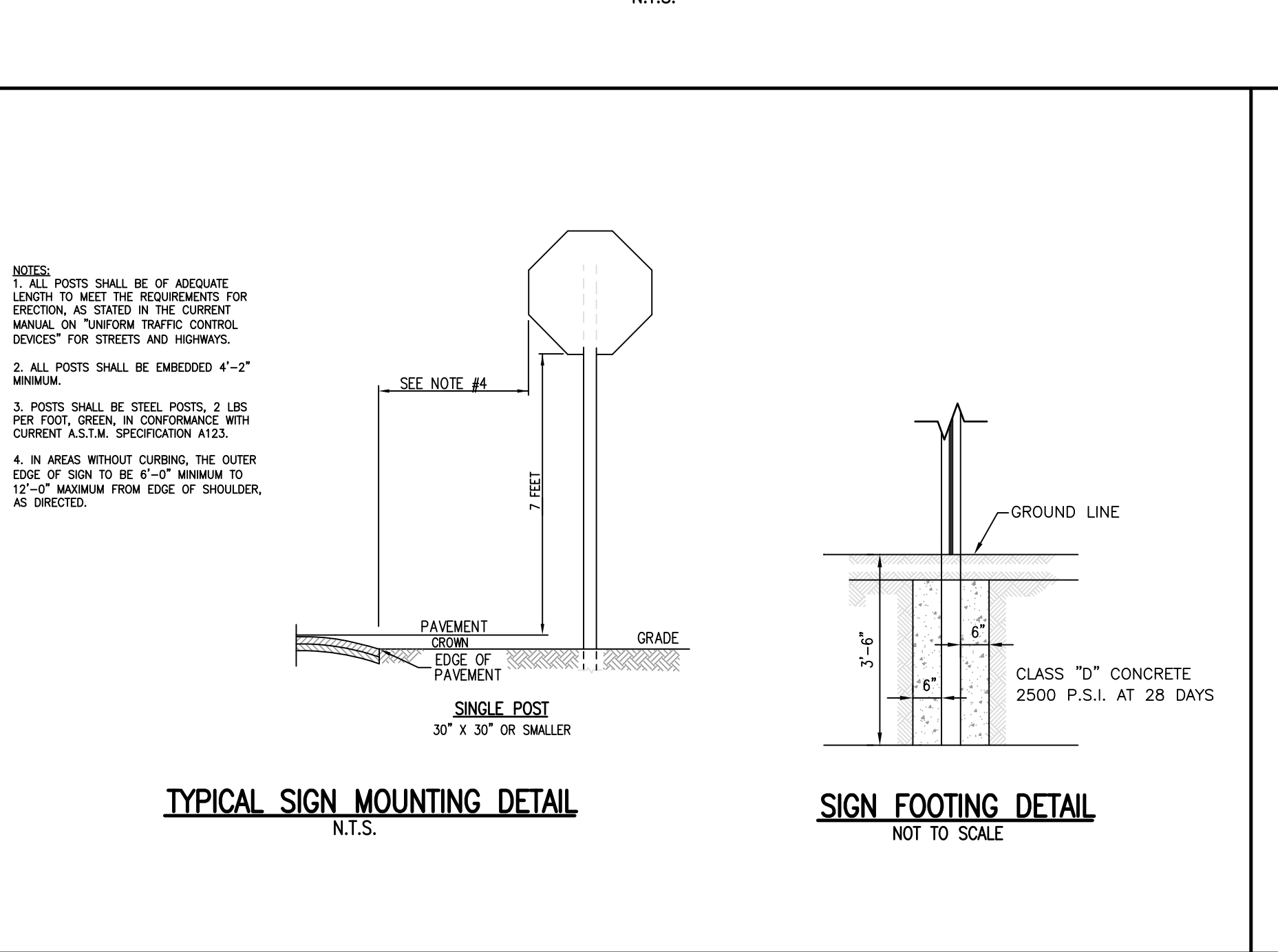
SIGNPOST INSTALLATION DETAIL
NOT TO SCALE



HANDICAPPED PARKING MARKINGS
N.T.S.

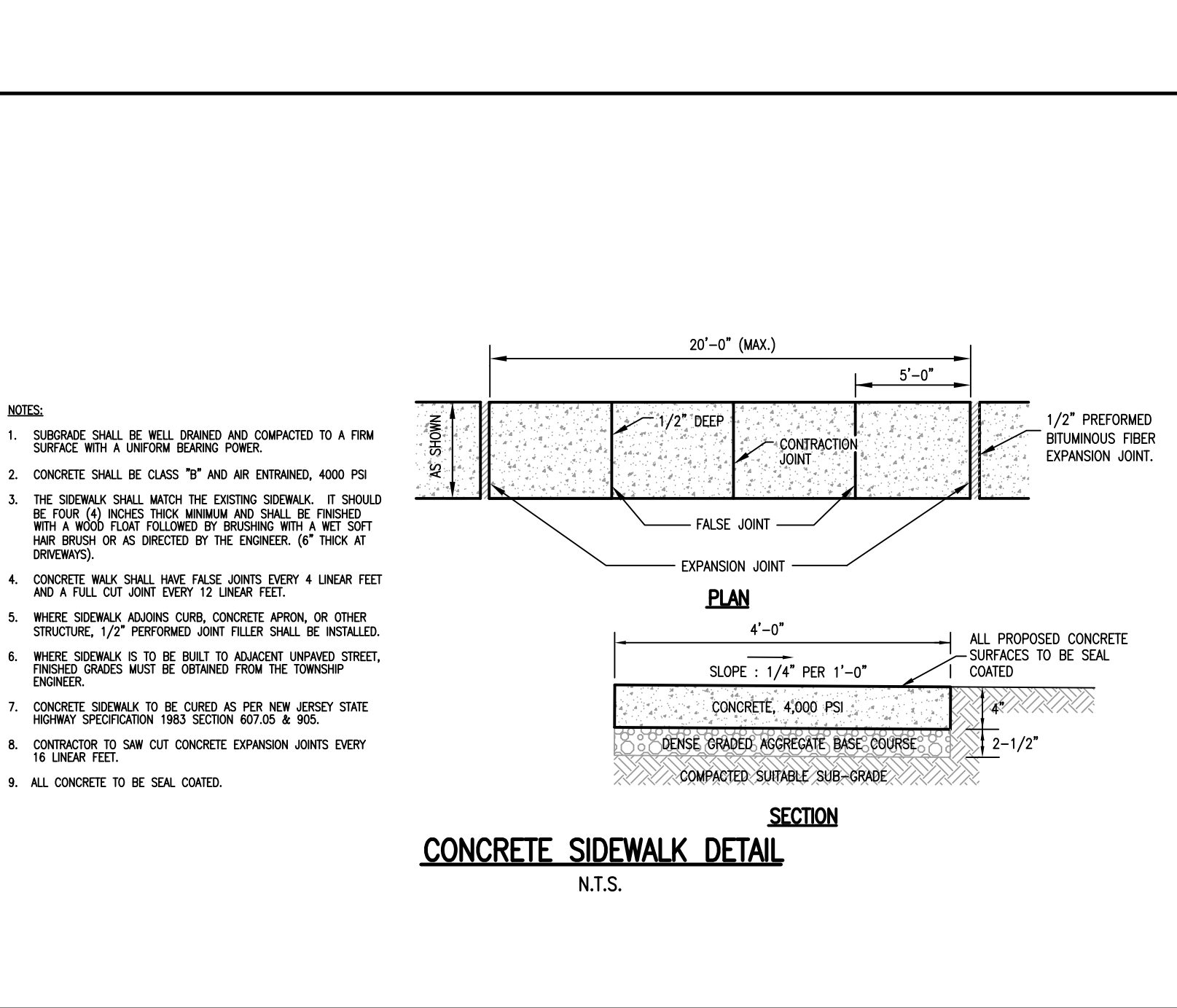


TYPICAL PARKING STALL MARKINGS
N.T.S.

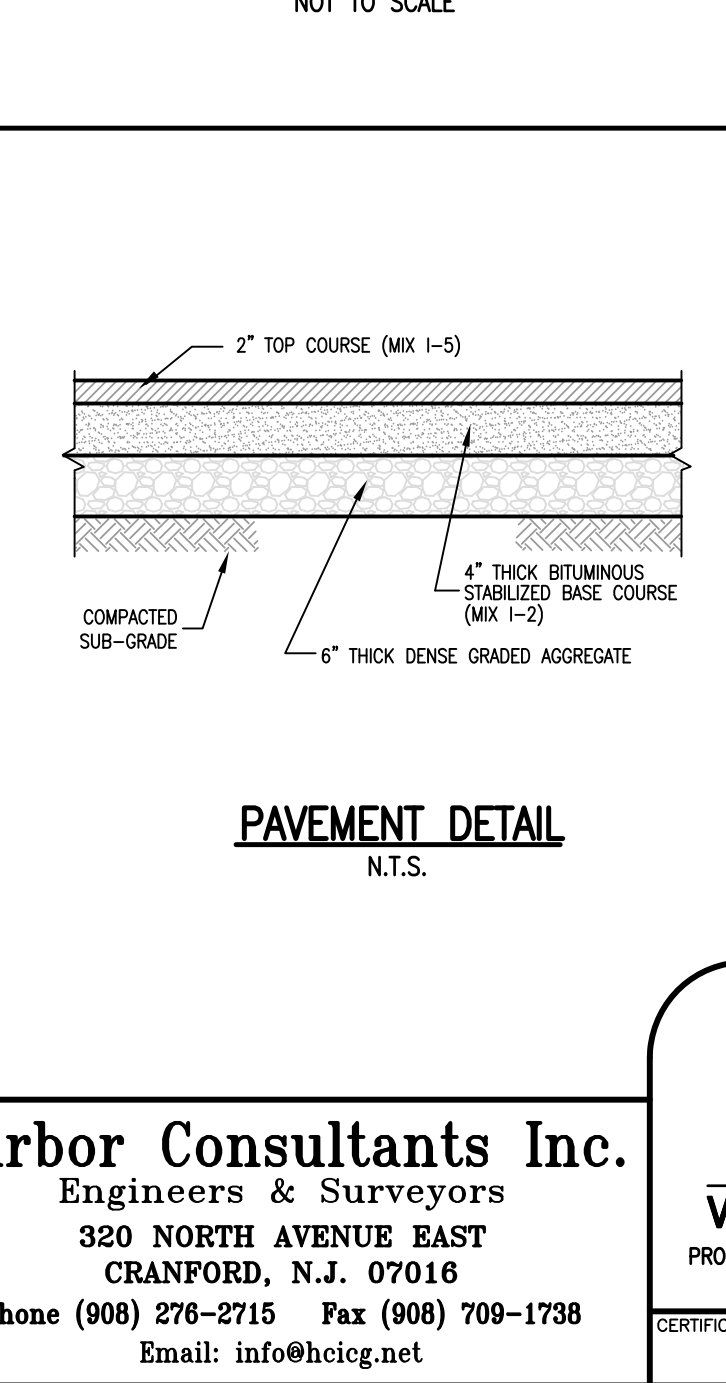


TYPICAL SIGN MOUNTING DETAIL
N.T.S.

SIGN FOOTING DETAIL
NOT TO SCALE



CONCRETE SIDEWALK DETAIL
N.T.S.



PAVEMENT DETAIL
N.T.S.

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DEMOLITION AND NEW CONSTRUCTION AT
WHEELER PARK
FOR THE
COUNTY OF UNION

1 09.26.17 BID SET

No.	Date	Issue or Revision

Drawing Title
CONSTRUCTION DETAILS

Scale AS INDICATED	USA Project No. 2014-110
Drawing Date 09.26.2017	Drawing No. C-6
Drawn By CVF	Checked By JMB

Harbor Consultants Inc.
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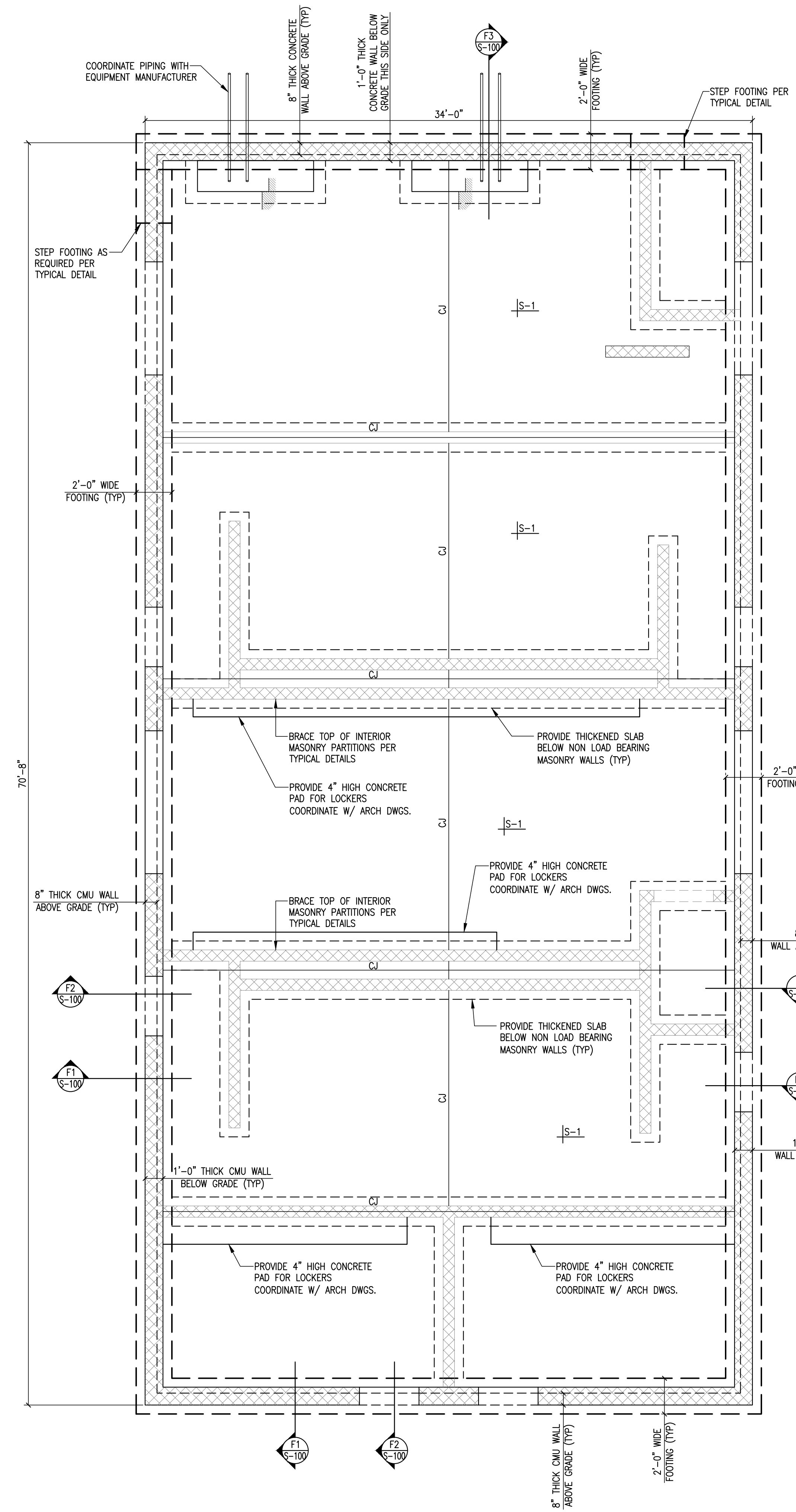


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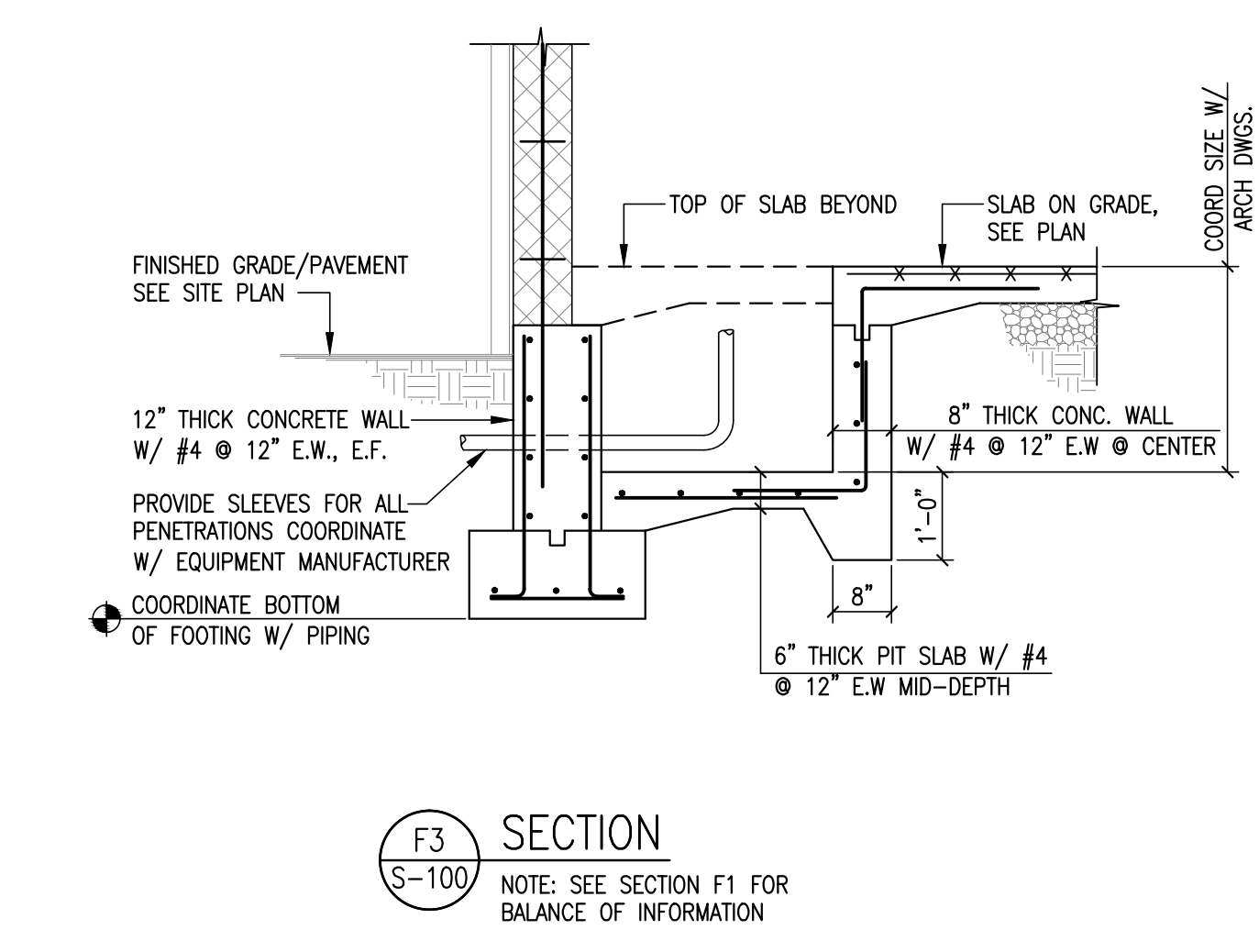
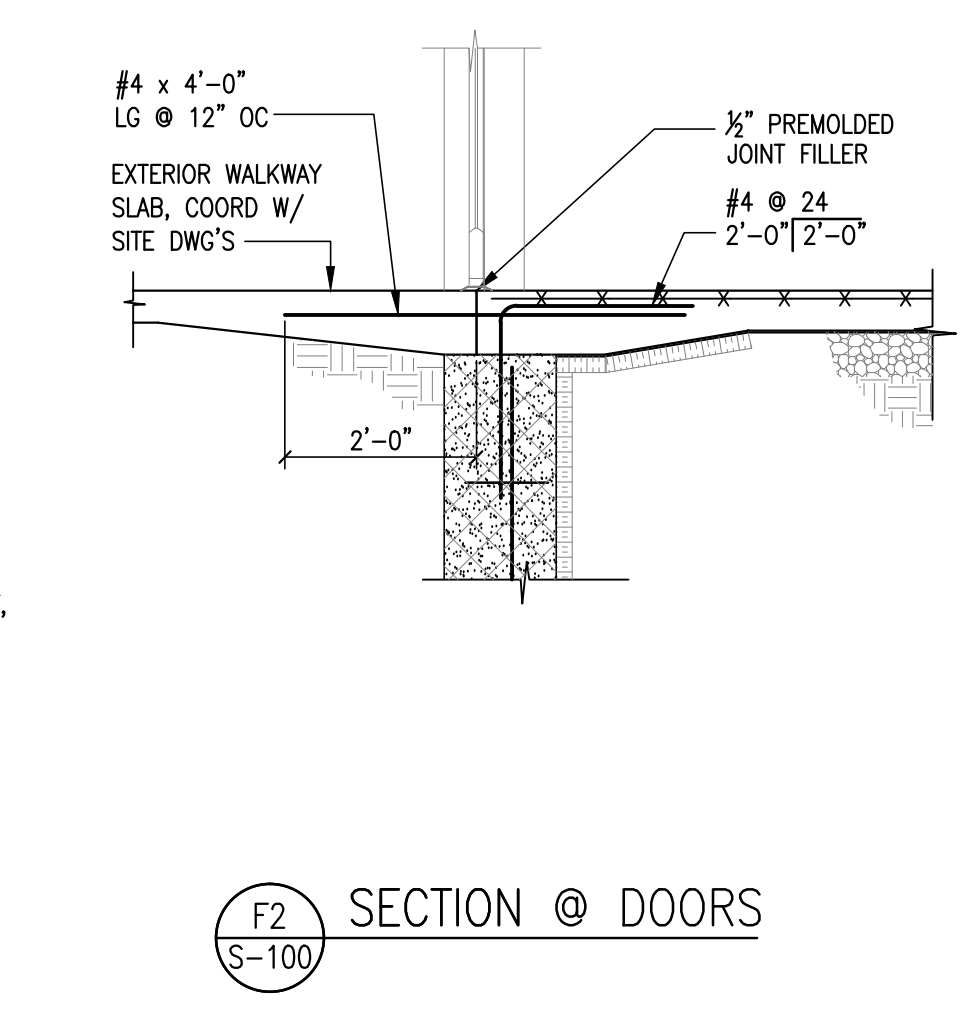
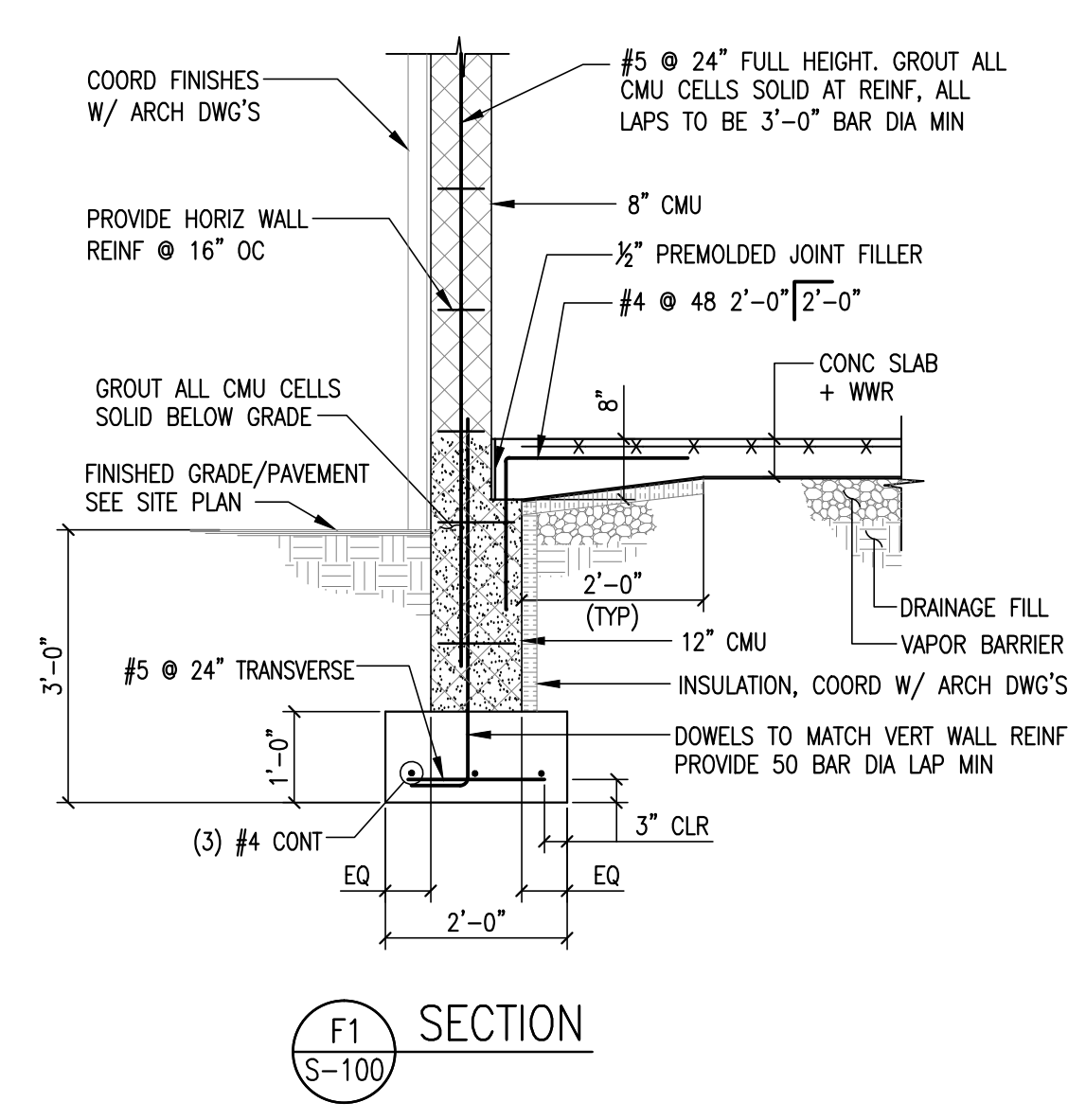
Andrew P. Adamato, AIA
Daniel J. Fortunato, AIA
Mitch Miller, AIA, FCSI, CCS
Susan M. DeHart, AIA



FOUNDATION / SLAB PLAN
SCALE: 1/4" = 1'-0" (DO NOT SCALE PLAN)

NOTES:

- TOP OF FINISHED FLOOR SLAB ELEVATION ... REFERENCED AS DATUM EL. 0'-0".
- TOP OF SLAB ELEVATION IS AT DATUM UNLESS NOTED THUS (E) ON PLAN FROM DATUM.
- TOP OF PROPOSED FOOTING ELEVATION IS -2'-8" BELOW DATUM UNLESS NOTED THUS (F) ON PLAN FROM DATUM.
- CJ - DENOTES CONTROL / CONSTRUCTION JOINT. MAXIMUM SPACING OF JOINTS NOT TO EXCEED 15'-0".
- S-1 DENOTES 5" SLAB ON GRADE REINFORCED W/ 6x6 - W2.0 x W2.0 WWR ON 15 MIL VAPOR BARRIER ON 6" DRAINAGE FILL.
- Change in floor elevation symbol.
- SLOPE DENOTES SLOPE TO LOW POINT.
- F - DENOTES CONCRETE FOOTING. SEE SCHEDULE FOR SIZE AND REINFORCEMENT.
- COORDINATE SLAB DEPRESSIONS WITH ARCHITECTURAL AND MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS.
- REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS NOT SHOWN.
- SEE TYPICAL DETAIL DRAWINGS FOR TYPICAL DETAILS NOT REFERENCED ON PLANS.
- FOR ADDITIONAL INFORMATION, SEE GENERAL NOTES.



MPP ENGINEERS LLC
34 S. Main St
Allentown, NJ 08501
Phone: (609) 489-5511

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DEMOLITION AND NEW CONSTRUCTION
AT
WHEELER PARK
FOR THE
COUNTY OF UNION

No.	Date	Issue or Revision
1	09.26.2017	BID SET

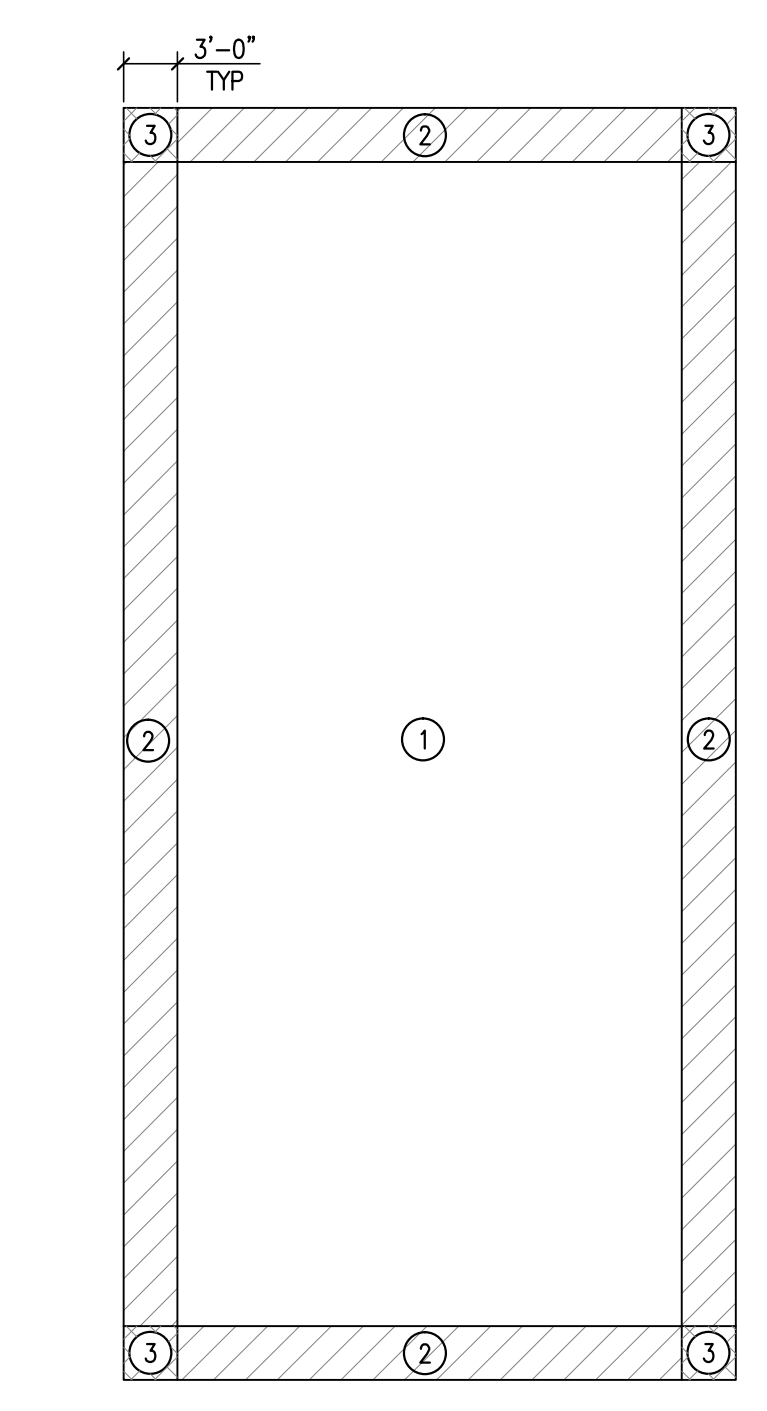
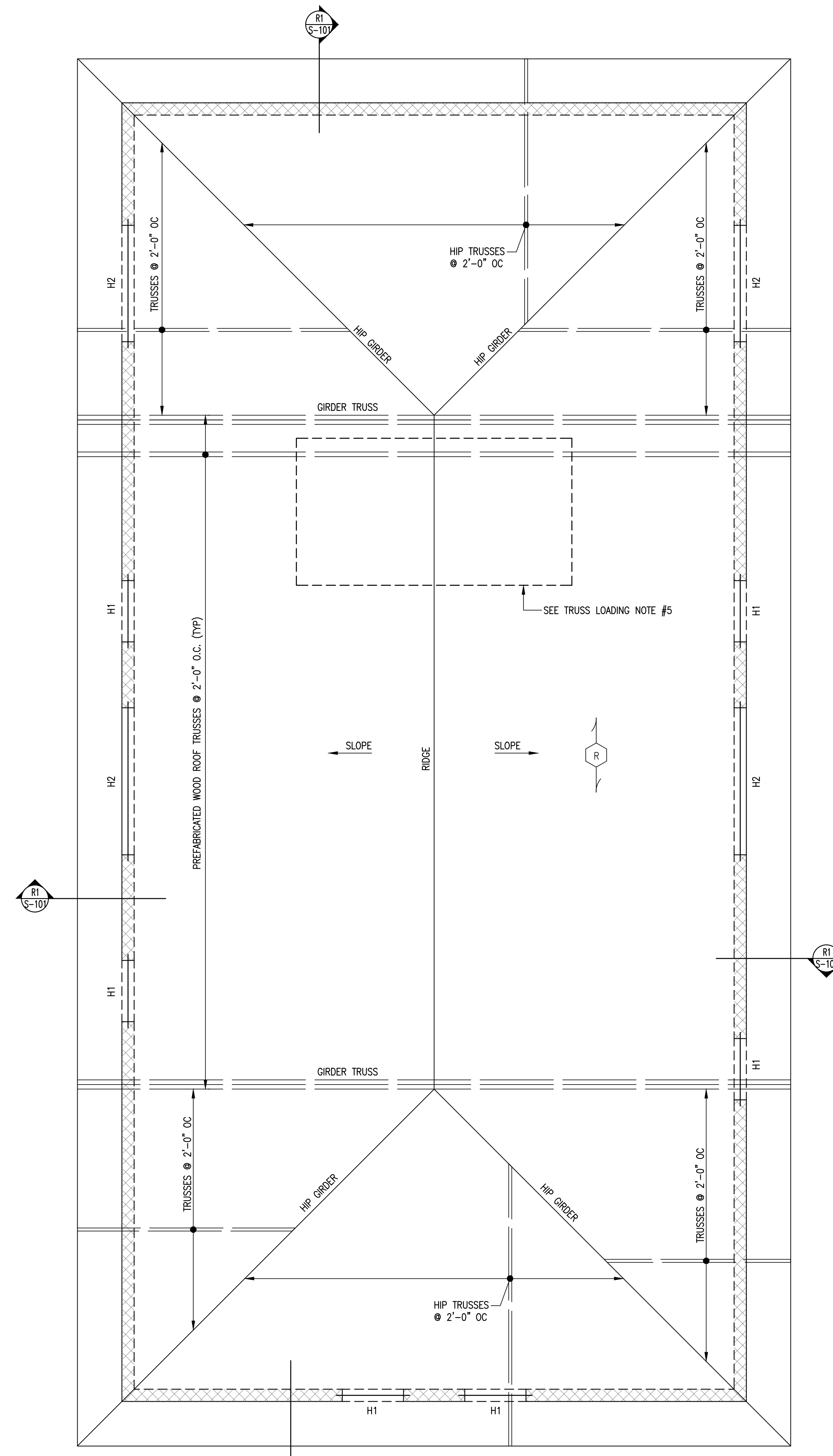
Drawing Title
FOUNDATION/SLAB PLAN & SECTIONS

Scale	AS INDICATED	USA Project No.	2014-110
Drawing Date	09.26.2017	Drawing No.	S-100
Drawn By	MPP	Checked By	AP

ROOF FRAMING PLAN
SCALE: 1/4" = 1'-0" (DO NOT SCALE PLAN)

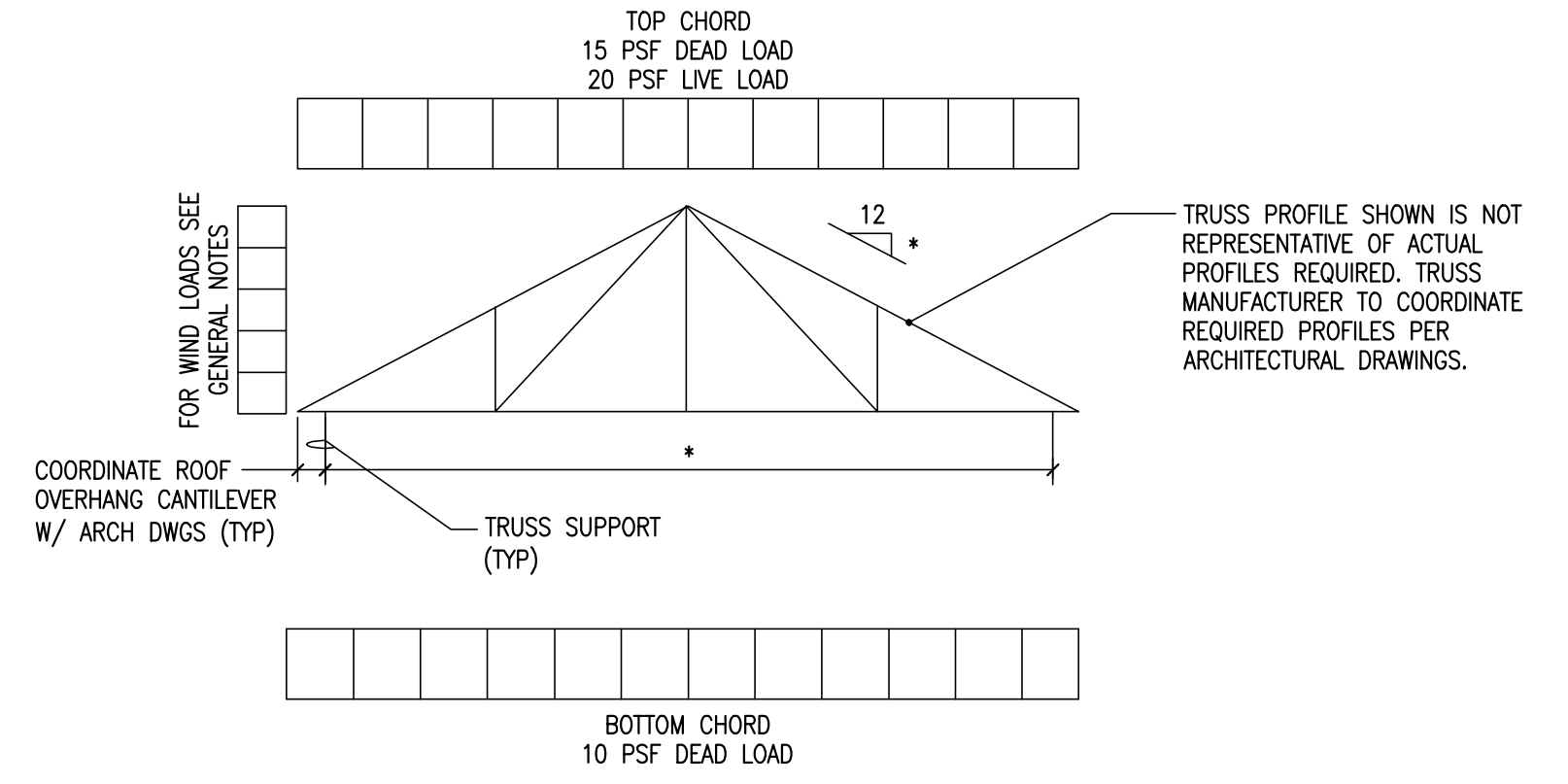
- NOTES:**
- SEE ARCH. DWGS FOR BOTTOM OF TRUSS BEARING ELEVATIONS.
 - THE GC/CM SHALL COORDINATE ALL OPENINGS WITH ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS AND TYPICAL DETAILS.
 - SEE TYPICAL DETAIL DRAWINGS FOR TYPICAL DETAILS NOT REFERENCED IN PLAN.
 - FOR ADDITIONAL INFORMATION, SEE GENERAL NOTES.
 - SLOPE DENOTES SLOPE TO LOW POINT. COORDINATE W/ ARCH DWGS.
 - (R) DENOTES SPAN OF 3/8" THICK APA RATED 950 ROOF SHEATHING.
 - H - DENOTES HEADER ABOVE OPENING IN WALL, SEE SCHEDULE.

MARK	MAX SPAN (FT)	SIZE OPTIONS		
		STEEL	MASONRY	CONCRETE
H1	3'-0"	JL4x3 3/8" LL BB	8"x16" W/ (2) #4 BOT	8"x8" W/ (2) #4 T&B
H2	8'-0"	JL6x3 3/8" LL BB	8"x24" W/ (2) #5 BOT	



GROSS WIND UPLIFT (ULTIMATE) DIAGRAM

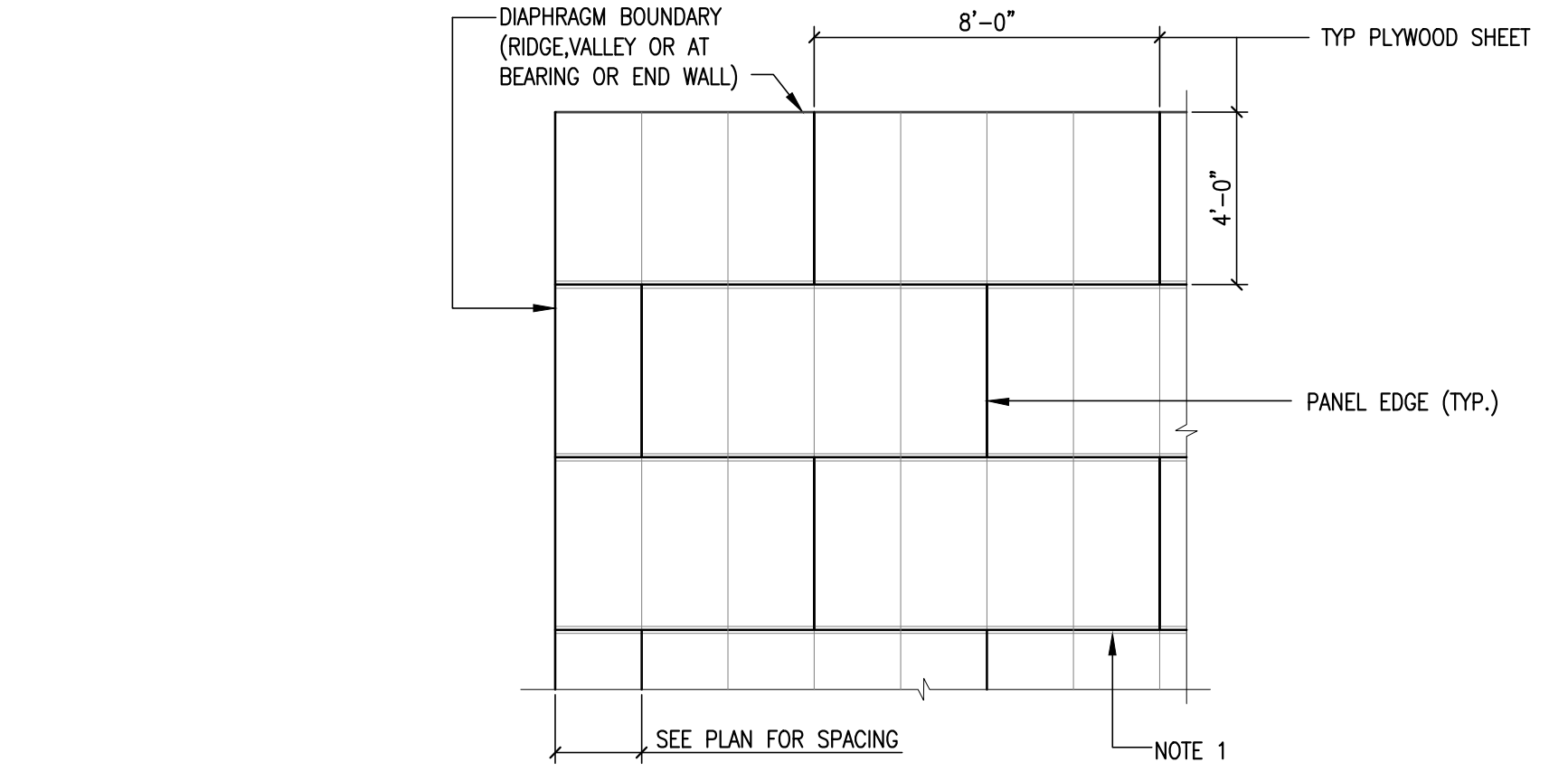
ZONE	TRIB (ft²)	GROSS UPLIFT (ULT)
1	20	28.8
2	10	48.4
3	10	72.8



1
S-101
PRE-FABRICATED ROOF TRUSS LOADING PROFILE

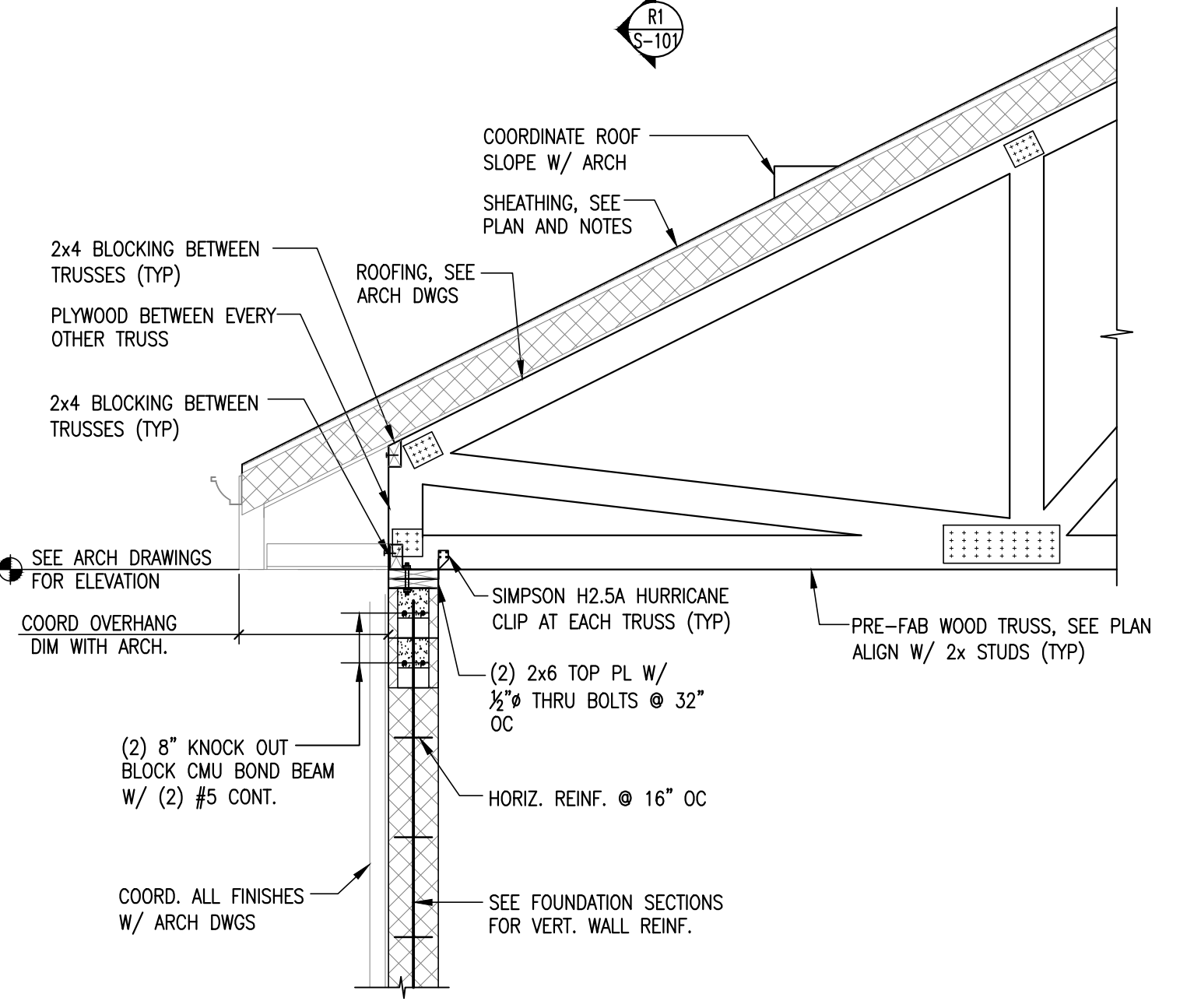
- NOTES:**
- COORDINATE ROOF SLOPE AND ROOF OVERHANGS W/ ARCH DRAWINGS.
 - COORDINATE DIMENSIONS INDICATED THUS (*) W/ ARCH DRAWINGS.
 - DESIGN ALL TRUSSES IN ACCORDANCE WITH THE LOADS INDICATED ABOVE UNLESS OTHERWISE NOTED.
 - ROOF TRUSSES TO BE DESIGNED TO SUPPORT HVAC EQUIPMENT & DUCT OPENINGS AS REQUIRED. COORDINATE W/ MECH DRAWINGS FOR LOCATION.
 - APPLY 20 PSF STORAGE LIVE LOAD TO TRUSS BOTTOM CHORD IN ADDITION TO ABOVE SPECIFIED LOADS. PROVIDE TRUSS PROFILES TO MAXIMUM STORAGE AREA AND CLEARANCES. COORDINATE TRUSS PROFILES WITH ARCHITECTURAL PRIOR TO FABRICATION.
 - APPLY WIND LOADING IN COMBINATION WITH DEAD, LIVE & SNOW LOADS.

SD1
S-101
TYPICAL DETAIL PANEL NAIL SPACING & SCHEDULE



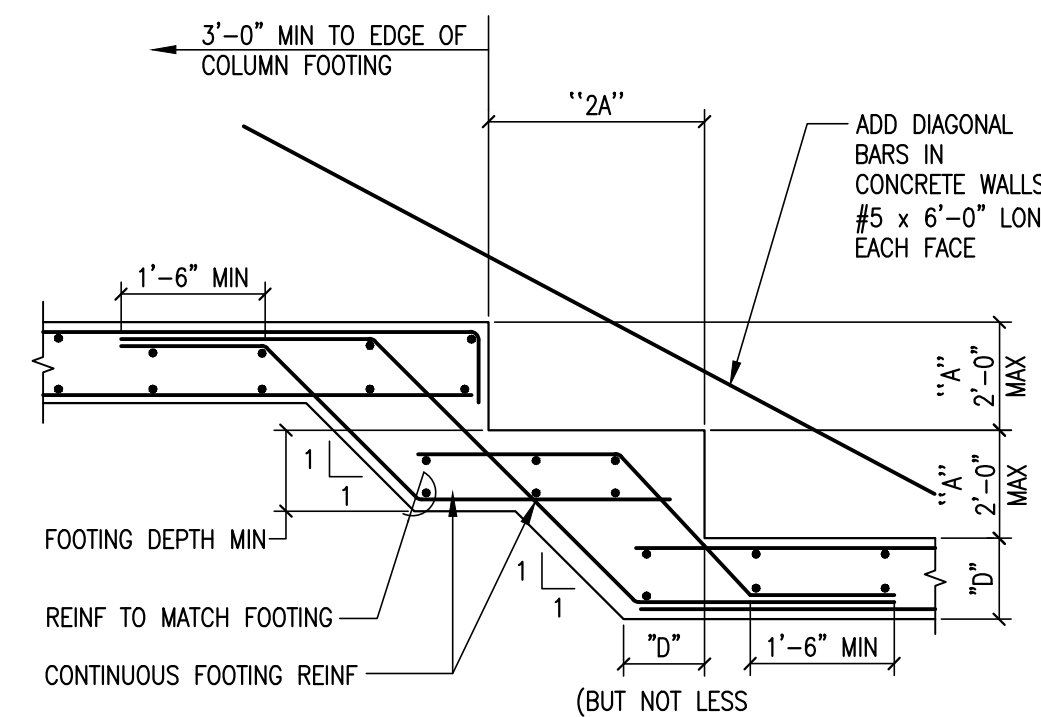
ZONE	PANEL GRADE	COMMON NAIL SIZE	MIN NAIL PENETRATION IN FRAMING	MIN NOMINAL PANEL THICKNESS	MIN NOMINAL WIDTH OF MEMBER	BLOCKED (NOTE 1)	NAIL SPACING @ DIAPHRAGM BOUNDARY & PANEL EDGE (TYP)	MAX NAIL SPACING @ INTERMEDIATE FRAMING MEMBERS
ROOF	APA RATED SHEATHING EXP 1, EXP 2 OR EX3 AND OTHER APA GRADES EXCEPT SPECIES GROUP 5	10d	1 1/2"	5/8"	2	NO	6" O/C	12" O/C
WALLS	OSB	10d	1 1/2"	3/4"	2	YES	6" O/C	12" O/C

- NOTE:**
- WHERE BLOCKING IS REQUIRED PROVIDE 2x4 BETWEEN FRAMING/TRUSSES AT EACH PLYWOOD JOINT NAILED TO FRAMING EA END.

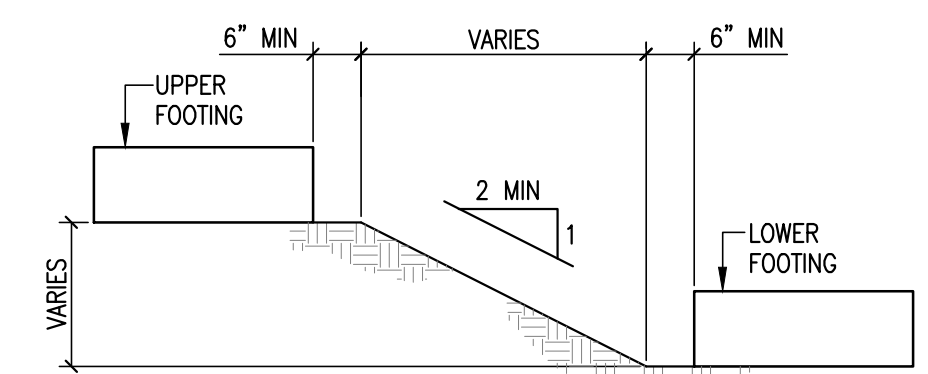


R1
S-101
SECTION

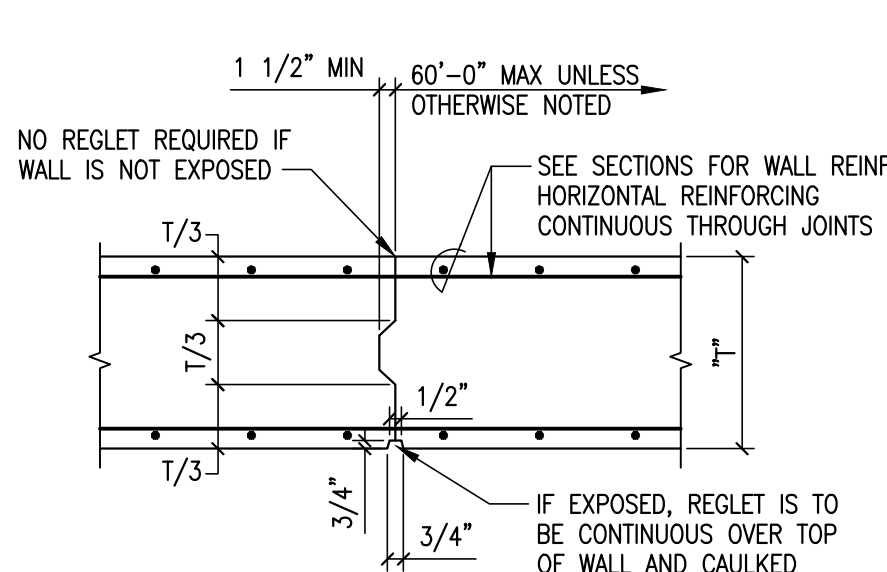
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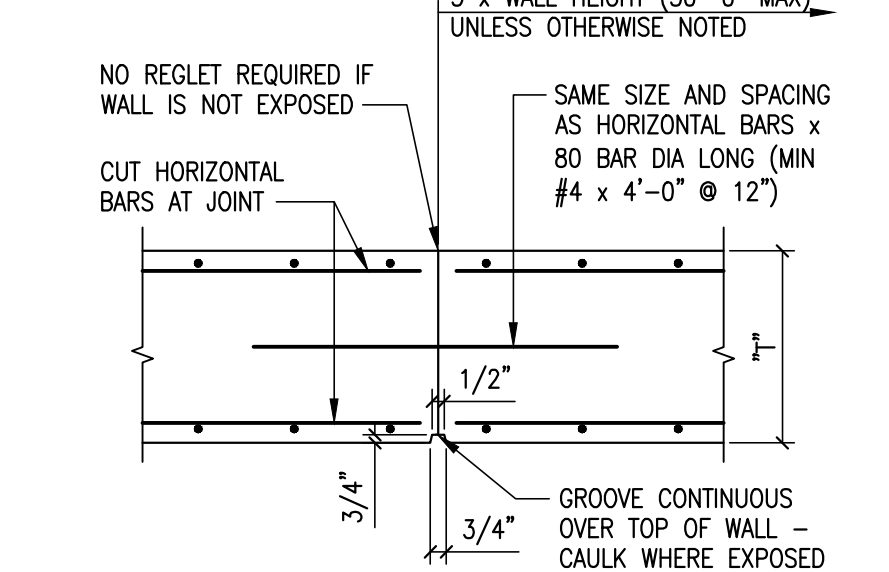
TD1
S-200
TYPICAL DETAIL
STEPPED WALL FOOTING



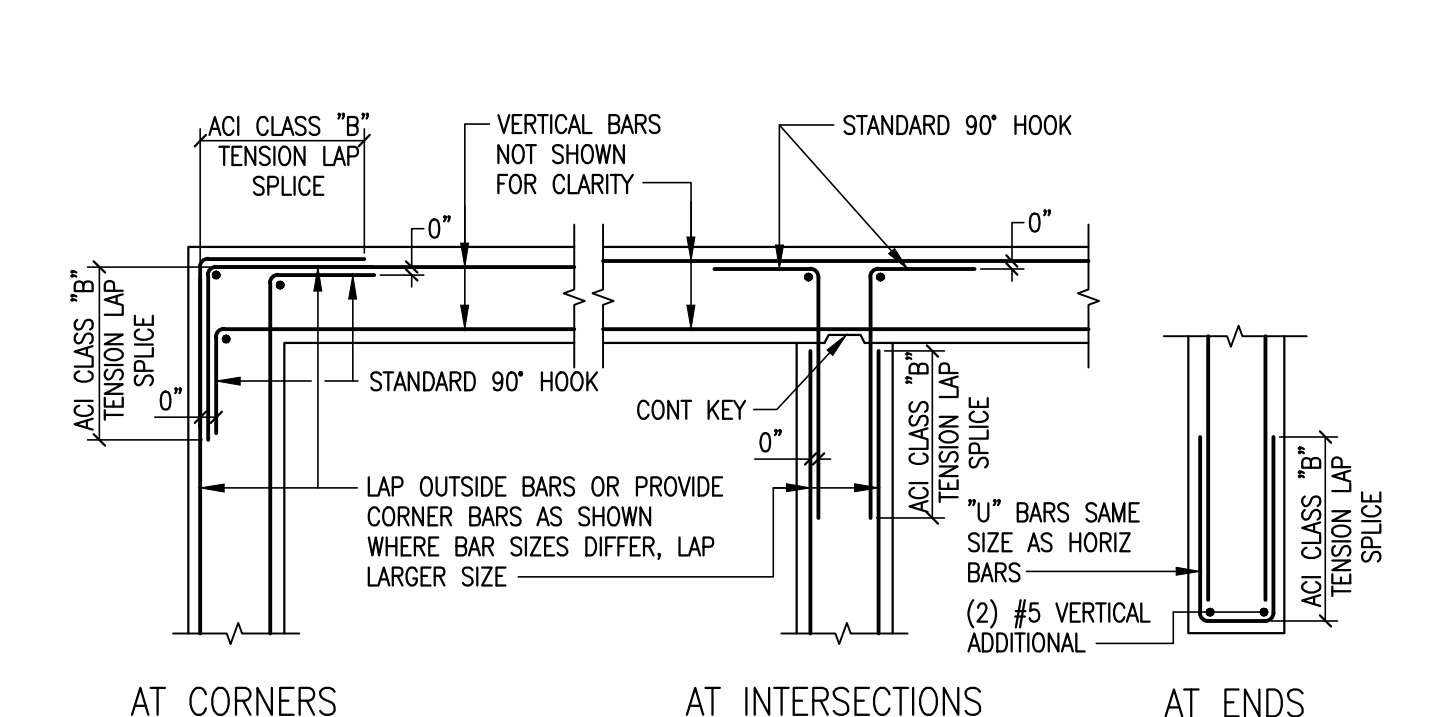
TD2
S-200
TYPICAL DETAIL
SLOPE BETWEEN FOOTINGS



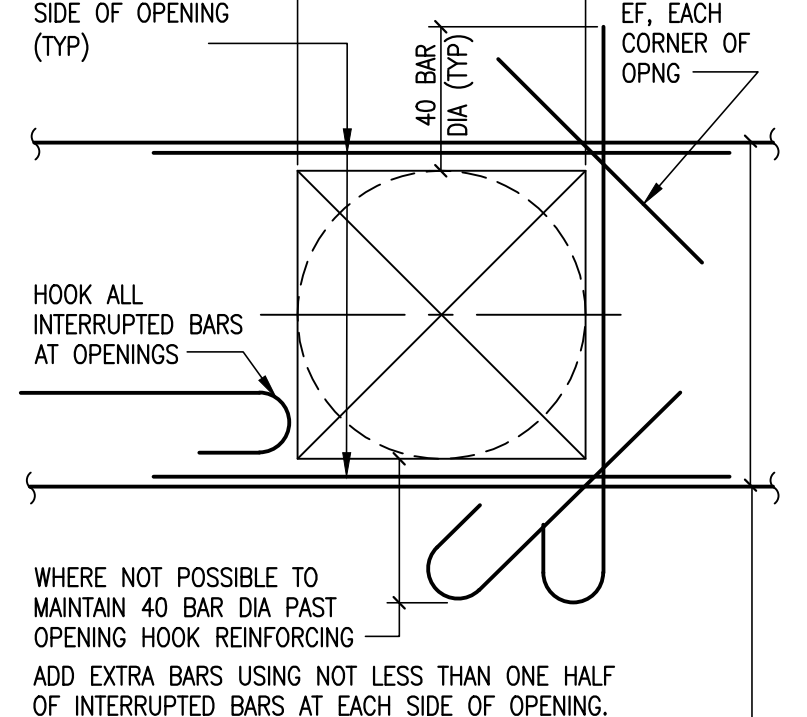
TD3
S-200
TYPICAL DETAIL
CONCRETE WALL CONSTRUCTION JOINT
(TWO LAYERS OF REINFORCEMENT)



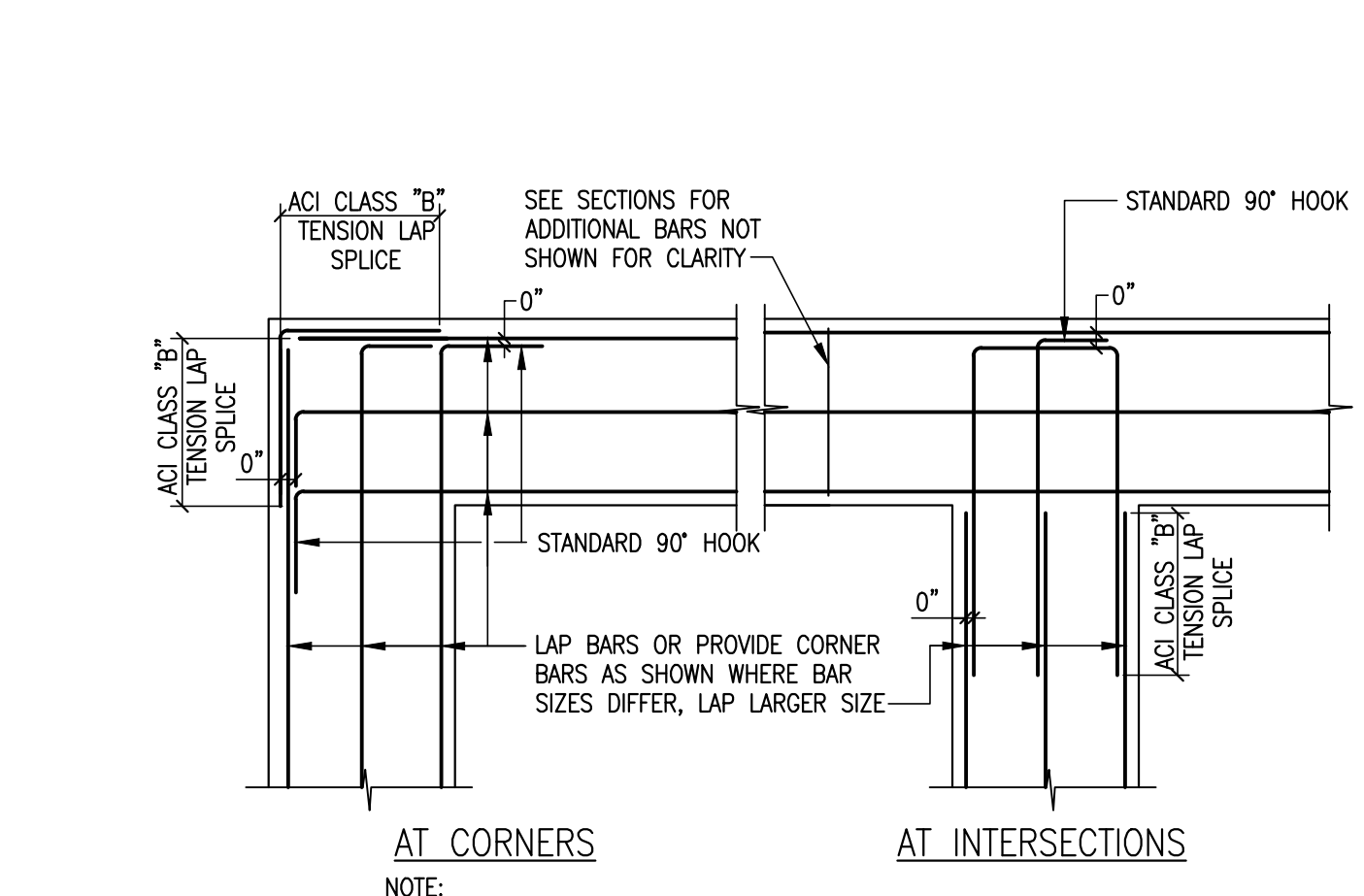
TD4
S-200
TYPICAL DETAIL
CONCRETE WALL CONTROL JOINT
(TWO LAYERS OF REINFORCEMENT)



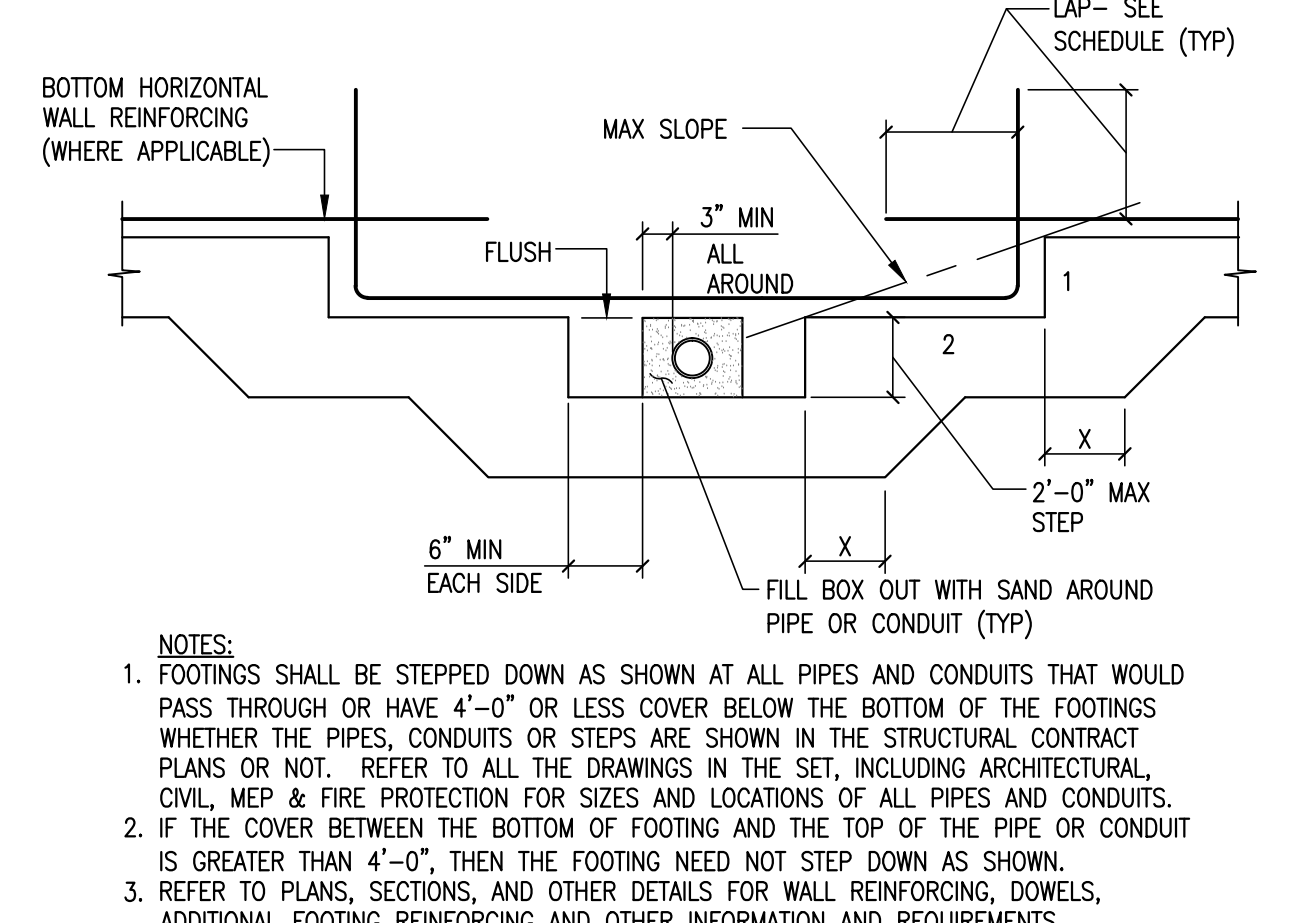
TD5
S-200
TYPICAL DETAIL
HORIZONTAL REINFORCEMENT IN CONCRETE WALLS



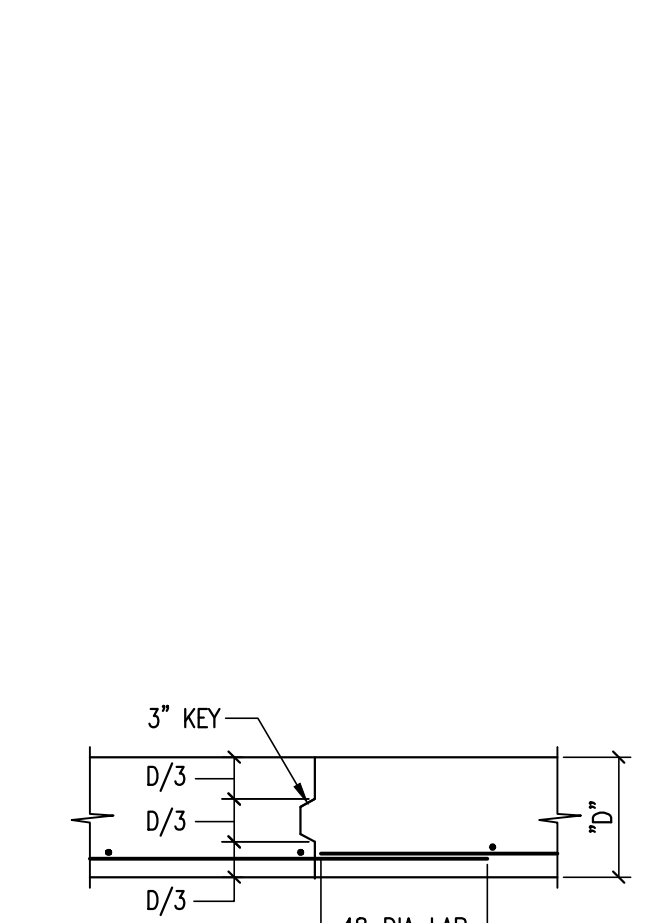
TD6
S-200
TYPICAL DETAIL
REINFORCING AT OPENINGS



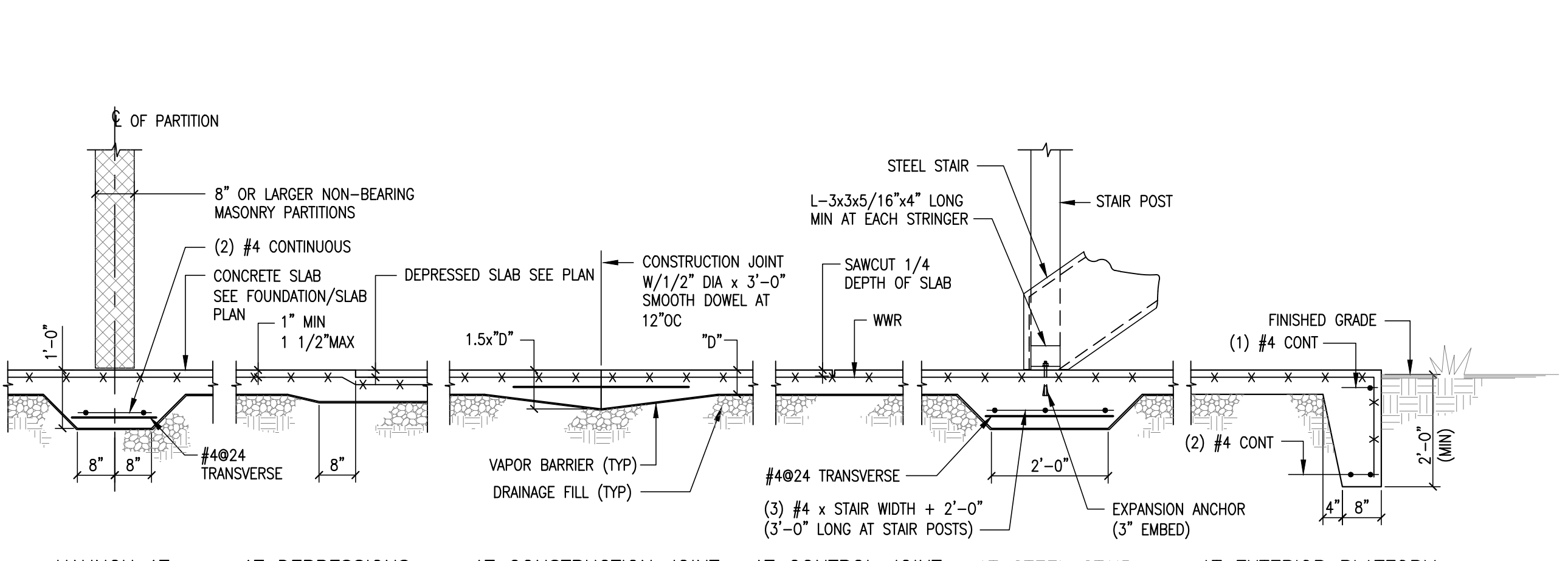
TD7
S-200
TYPICAL DETAIL
REINFORCEMENT IN CONCRETE FOOTINGS



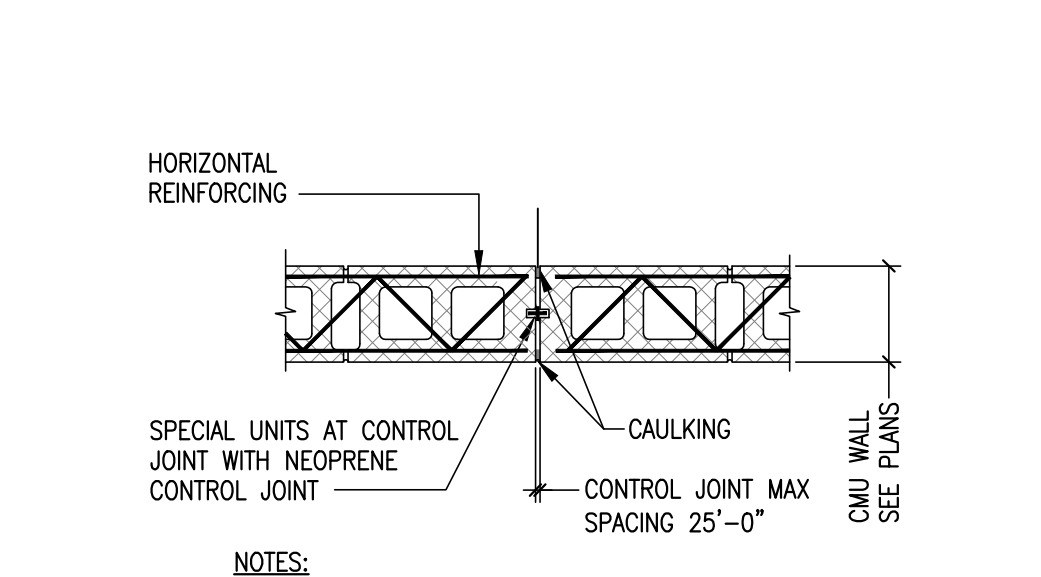
TD8
S-200
TYPICAL DETAIL
FOUNDATION WALL PIPE AND
CONDUIT PENETRATION



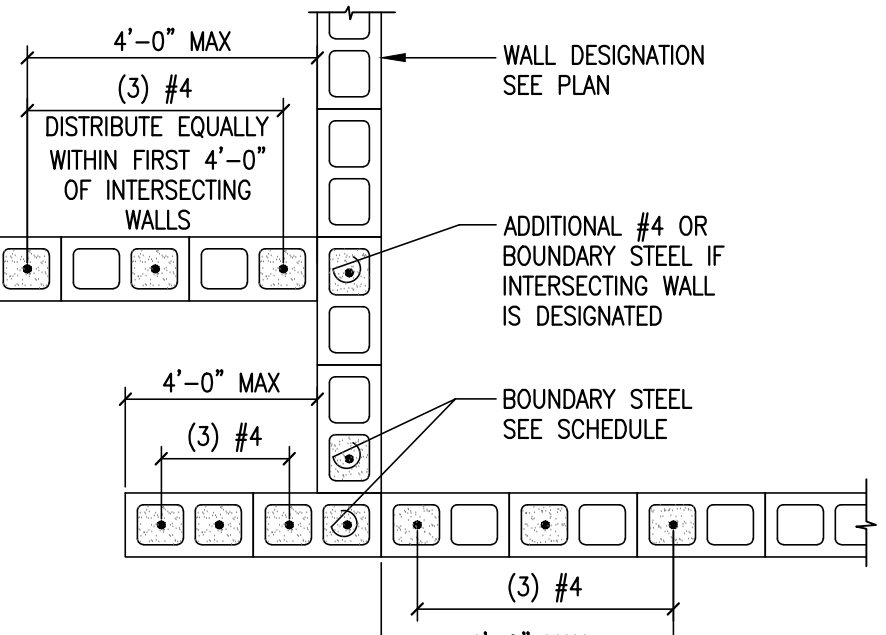
TD9
S-200
TYPICAL DETAIL
WALL FOOTING CONSTRUCTION JOINT



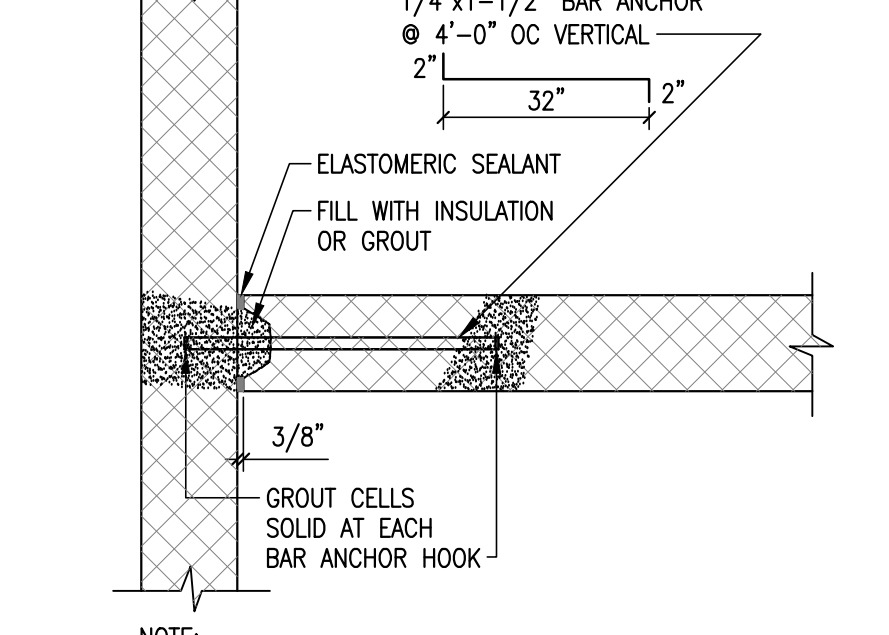
TD10
S-200
TYPICAL DETAIL
SLAB ON GRADE



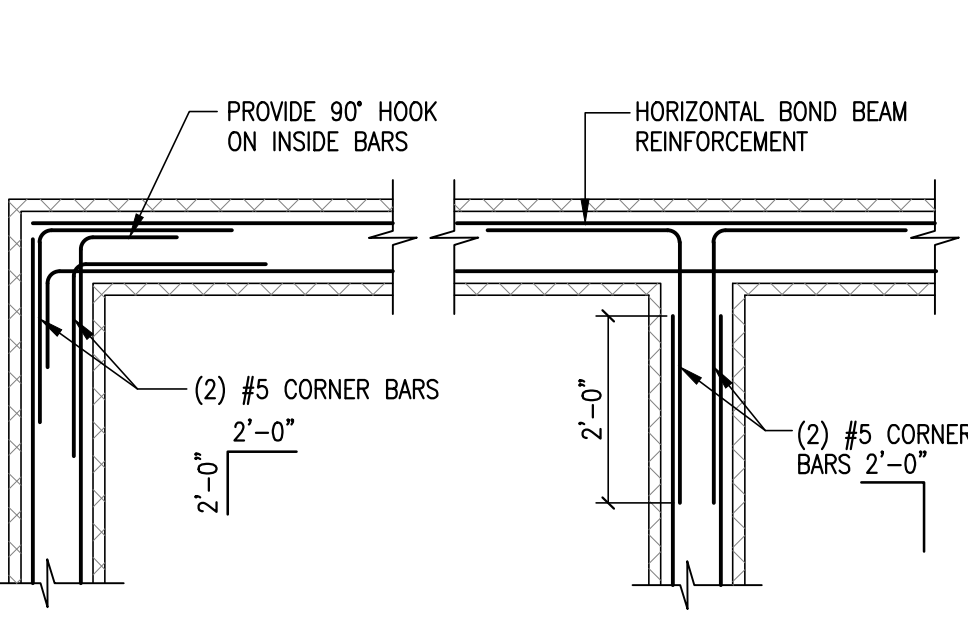
TD11
S-200
TYPICAL DETAIL
CONTROL JOINT IN CMU WALL



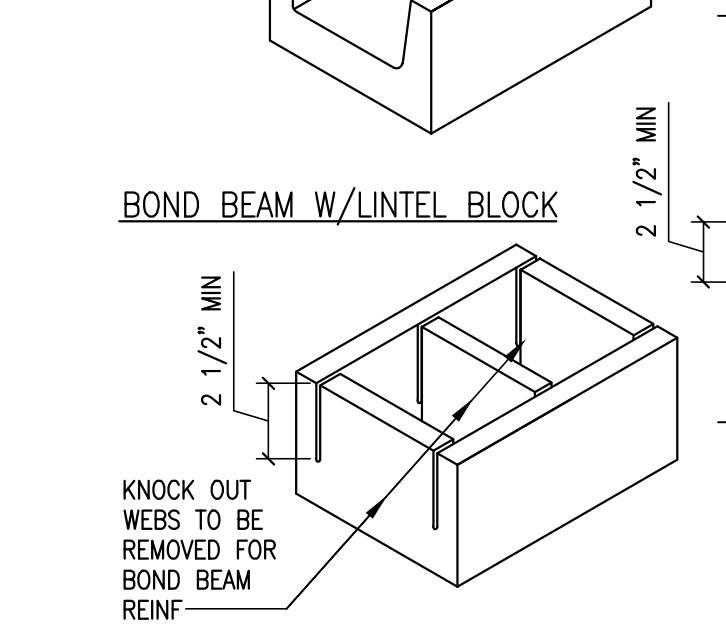
TD12
S-200
TYPICAL DETAIL
WALL REINFORCEMENT AT CORNERS
AND AT WALL INTERSECTIONS



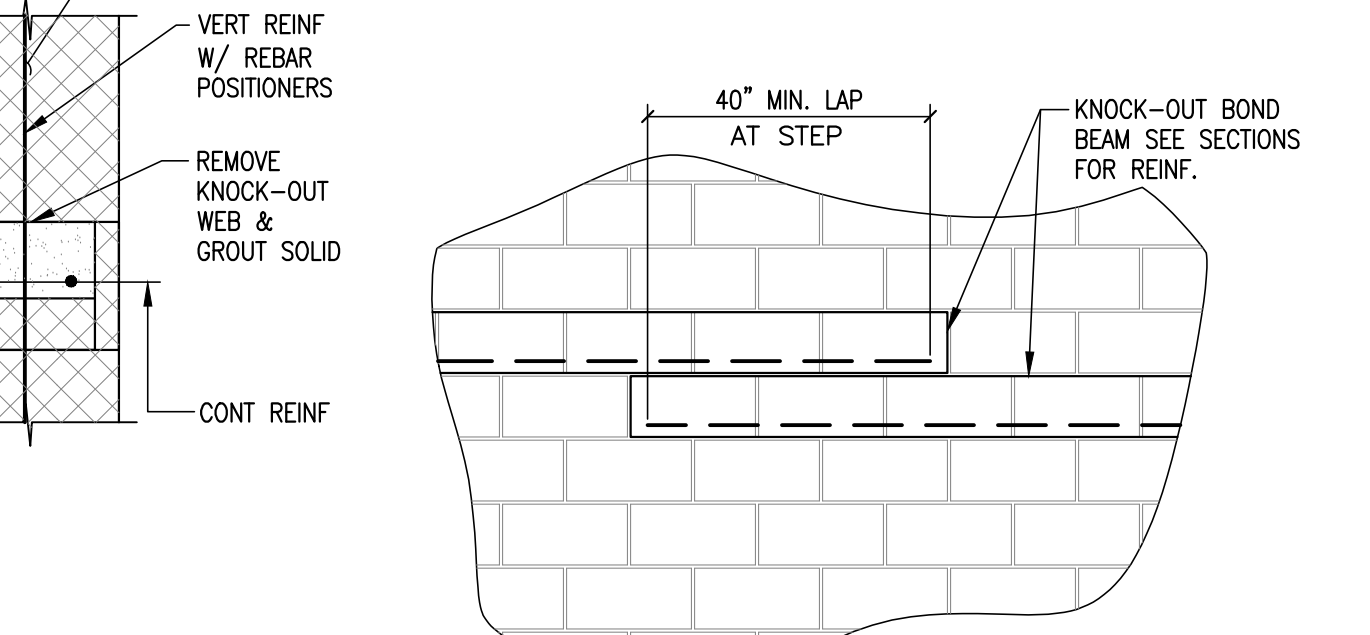
TD13
S-200
TYPICAL DETAIL
INTERSECTING WALLS WHEN
BUILT SEPARATELY



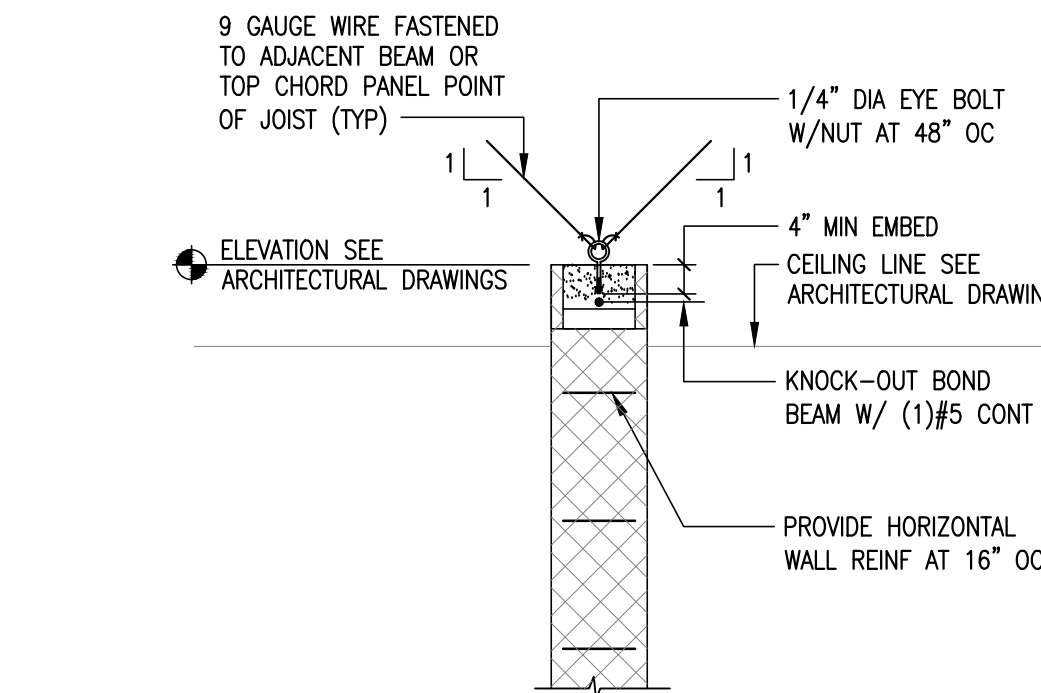
TD14
S-200
TYPICAL DETAIL
HORIZONTAL REINFORCEMENT
IN BOND BEAMS



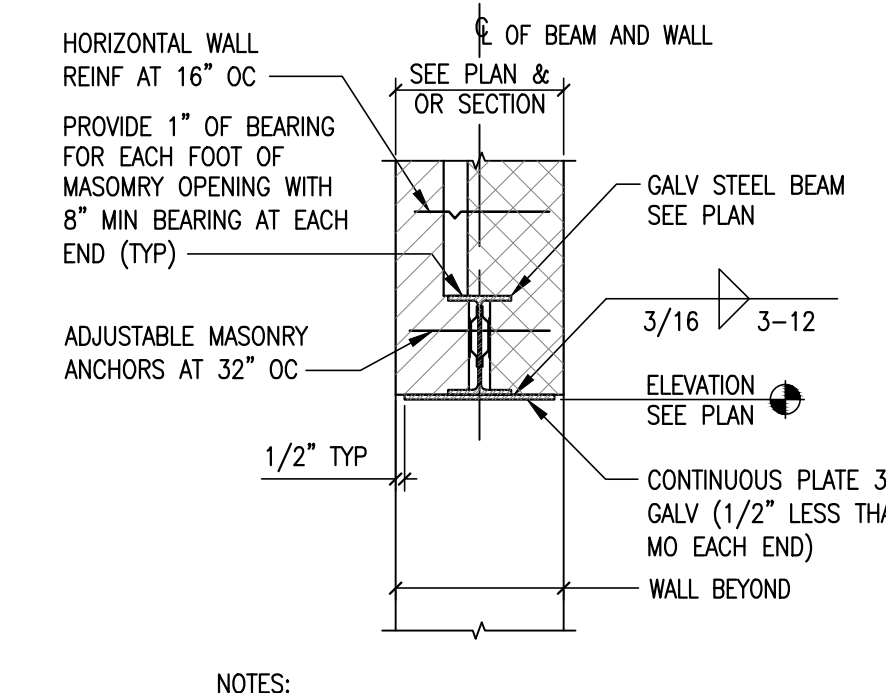
TD15
S-200
TYPICAL DETAIL
MASONRY BOND BEAMS



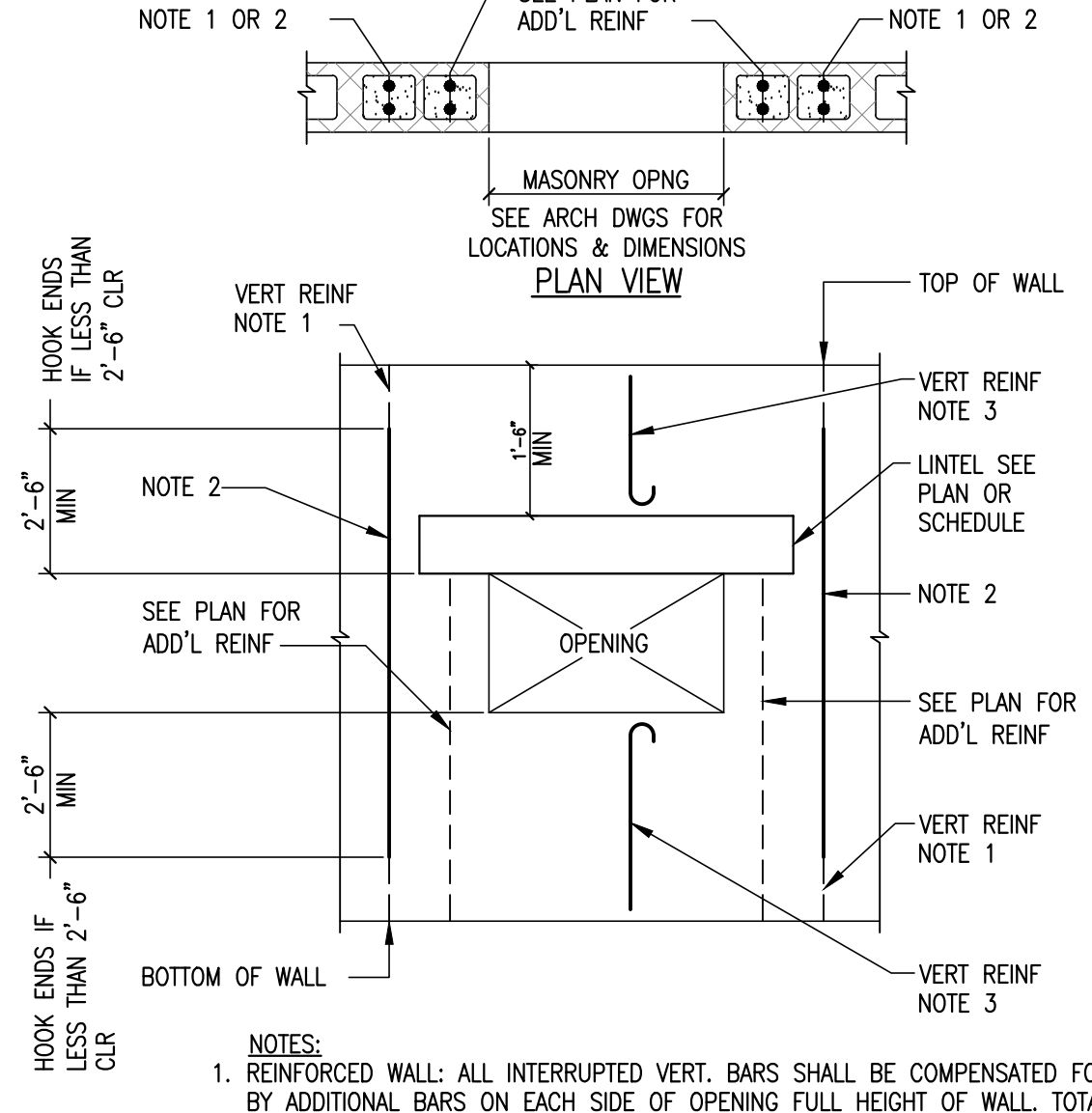
TD16
S-200
TYPICAL DETAIL
STEPPED BOND BEAM



TD17
S-200
TYPICAL DETAIL
CMU WALL SUPPORT
WHERE WALLS TERMINATE IMMEDIATELY
ABOVE CEILING LINE



TD18
S-200
TYPICAL DETAIL
BEAM LINTEL



TD19
S-200
TYPICAL DETAIL
MASONRY WALL OPENING REINFORCING

MISCELLANEOUS STEEL ANGLE MASONRY WALL LINTEL SCHEDULE			
WALL THICKNESS	MASONRY OPENING UP TO 4'-0"	MASONRY OPENING 4'-1" TO 6'-0"	MASONRY OPENING 6'-1" TO 10'-0"
4" WALL	L 3 1/2x3 1/2x5/16	L 4x3 1/2x5/16	L 6x3 1/2x5/16
6" WALL	JL 3 1/2x2 1/2x5/16	JL 3 1/2x2 1/2x5/16	JL 3 1/2x2 1/2x3/8
8" WALL	JL 3 1/2x3 1/2x5/16	JL 4x3 1/2x5/16	JL 6x3 1/2x5/16
10" WALL	L 5x3 1/2x1/4(*) + L 4x3 1/2x1/4(*)	L 5x3 1/2x1/4(*) + L 4x3 1/2x1/4(*)	L 5x5x5/16(*) + L 4x4x5/16(*)
12" WALL	JL L 3 1/2x3 1/2x5/16	JL L 4x3 1/2x5/16	JL L 6x3 1/2x5/16
16" WALL	JL JL 3 1/2x3 1/2x5/16	JL JL 4x3 1/2x5/16	JL JL 6x3 1/2x5/16

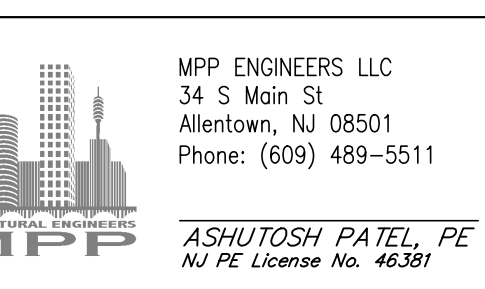
TD20
S-200
TYPICAL DETAIL
MISCELLANEOUS STEEL ANGLE MASONRY
WALL LINTEL SCHEDULE

MISCELLANEOUS BOND OR PRECAST MASONRY LINTEL SCHEDULE			
WALL THICKNESS	MASONRY OPENING UP TO 6'-0"	MASONRY OPENING 6'-1" TO 8'-0"	MASONRY OPENING 8'-1" TO 10'-0"
8" WALL	8"x8" CONC W/(2) #4 TOP & BOT OR 8"x8" BOND BEAM W/(1) #5 TOP & BOT	8"x8" CONC W/(2) #4 TOP & BOT OR 8"x16" BOND BEAM W/(1) #6 TOP & BOT	8"x12" CONC W/(2) #5 TOP & BOT OR 8"x16" BOND BEAM W/(2) #5 TOP & BOT
10" WALL	10"x8" CONC W/(2) #4 TOP & BOT OR 10"x8" BOND BEAM W/(2) #4 TOP & BOT	10"x8" CONC W/(2) #4 TOP & BOT OR 10"x16" BOND BEAM W/(2) #5 TOP & BOT	10"x12" CONC W/(2) #6 TOP & BOT OR 10"x16" BOND BEAM W/(2) #6 TOP & BOT
12" WALL	12"x8" CONC W/(2) #4 TOP & BOT OR 12"x8" BOND BEAM W/(2) #5 TOP & BOT	12"x8" CONC W/(2) #4 TOP & BOT OR 12"x16" BOND BEAM W/(2) #5 TOP & BOT	12"x12" CONC W/(2) #6 TOP & BOT OR 12"x16" BOND BEAM W/(2) #6 TOP & BOT

TD21
S-200
TYPICAL DETAIL
MISCELLANEOUS BOND OR PRECAST MASONRY LINTEL SCHEDULE
FOR NON-LOAD BEARING WALLS



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DEMOLITION AND NEW CONSTRUCTION
AT
WHEELER PARK
FOR THE
COUNTY OF UNION

No.	Date	Issue or Revision
1	09.26.2017	BID SET

Drawing Title
TYPICAL DETAILS
Scale
AS INDICATED
09.26.2017
USA Project No.
2014-110
Drawing No.
S-200

BUILDING CODE INFORMATION

NEW JERSEY ADMINISTRATIVE CODES

APPLICABLE CONSTRUCTION CODES

N.J.A.C. 5:23	UNIFORM CONSTRUCTION CODE (UCC)
N.J.A.C. 5:70	UNIFORM FIRE CODE (UFC) AND THE STATE FIRE PREVENTION CODE
N.J.A.C. 5:23-3.14	BUILDING SUBCODE (IBC(2015))
N.J.A.C. 5:23-3.15	PLUMBING SUBCODE (NSPC(2015))
N.J.A.C. 5:23-3.16	ELECTRICAL SUBCODE (NEC(2014))
N.J.A.C. 5:23-3.17	FIRE PROTECTION SUBCODE (SPECIFIC PORTIONS OF THE IBC, NEC, IBC, IFCC)
N.J.A.C. 5:23-3.18	ENERGY SUBCODE (IECC(2015))
N.J.A.C. 5:23-30	MECHANICAL SUBCODE (IMC(2015))
N.J.A.C. 5:23-6	REHABILITATION SUBCODE
N.J.A.C. 5:23-7	BARRIER FREE CODE

CHAPTER 3: USE AND OCCUPANCY CLASSIFICATION

IBC REFERENCE	USE GROUP CLASSIFICATION
303.4	ASSEMBLY GROUP A-3 INDOOR AREAS
303.6	ASSEMBLY GROUP A-5 OUTDOOR AREAS

CHAPTER 5: GENERAL BUILDING HEIGHTS AND AREAS

ALLOWABLE HEIGHTS AND AREAS

USE GROUP	ALLOWABLE HEIGHT AND STORIES, TABLES 504.3 AND 504.4	ALLOWABLE AREA, TABLE 506.2
A-3	55' / 2 STORIES	9,500 SF

506.2.1 SINGLE OCCUPANCY, ONE STORY BUILDINGS:

Aa = At + (NS X If)

Aa = 9,500 + (9,500 X 0)

Aa = 9,500 S.F. WITH NO FRONTAGE INCREASE, NO SPRINKLERS

EXISTING BUILDING HEIGHT AND STORIES	21'-0" / 1 STORY
EXISTING AREA	450 SF

PROPOSED BUILDING HEIGHT AND STORIES	16'-0" / 1 STORY
PROPOSED AREA	2,363 SF

508.3 NONSEPARATED OCCUPANCIES BUILDINGS OR PORTIONS OF BUILDINGS THAT COMPLY WITH THE PROVISIONS OF THIS SECTION SHALL BE CONSIDERED AS NONSEPARATED OCCUPANCIES.

508.3.3 SEPARATION NO SEPARATION IS REQUIRED BETWEEN NONSEPARATED OCCUPANCIES AND THE MAIN OCCUPANCY.

CHAPTER 6: TYPES OF CONSTRUCTION

IBC REFERENCE	CONSTRUCTION CLASSIFICATION
602.2	IIIB

TABLE 601 - FIRE-RESISTANCE RATING OF BUILDING ELEMENTS		
BUILDING ELEMENT	REQUIRED RATING	PROVIDED RATING
STRUCTURAL FRAME INCLUDING COLUMNS, GIRDERS & TRUSSES	0 HOUR	0 HOUR
BEARING WALLS EXTERIOR INTERIOR	0 HOUR / 0 HOUR	0 HOUR / 0 HOUR
NONBEARING WALLS AND PARTITIONS EXTERIOR INTERIOR	SEE TABLE 602 / 0 HOUR	SEE TABLE 602 / 0 HOUR
FLOOR CONSTRUCTION INCLUDING SUPPORTING BEAMS & JOISTS	0 HOUR	0 HOUR
ROOF CONSTRUCTION INCLUDING SUPPORTING BEAMS AND JOISTS	0 HOUR	0 HOUR

603 COMBUSTIBLE MATERIAL IN TYPES I AND II CONSTRUCTION
603.1.1 FIRE RETARDANT TREATED WOOD PERMITTED IN ROOF CONSTRUCTION.

CHAPTER 8: INTERIOR FINISHES

IBC REFERENCE	CLASSIFICATION	FLAME SPREAD	SMOKE DEVELOPMENT
803.11	CLASS A INTERIOR FINISH:	0-25	0-450
	CLASS B INTERIOR FINISH:	26-75	0-450
	CLASS C INTERIOR FINISH:	76-200	0-450

TABLE 803.11 - INTERIOR WALL AND CEILING FINISH REQUIREMENTS

LOCATION	OCCUPANCY	REQUIREMENT
ROOMS AND ENCLOSED SPACES	A-3	CLASS C

CHAPTER 9: FIRE PROTECTION SYSTEMS

903	AUTOMATIC SPRINKLER SYSTEMS 903.2.1.3 GROUP A-3	REQUIRED NO	PROVIDED NO
905	STANDPIPE SYSTEMS GROUP A-3	REQUIRED NO	PROVIDED NO
906	PORTABLE FIRE EXTINGUISHERS GROUP A-3	REQUIRED YES	PROVIDED YES

TABLE 906.1 - ADDITIONAL REQUIRED PORTABLE FIRE EXTINGUISHERS IN THE INTERNATIONAL FIRE CODE

NFPA 10 PORTABLE FIRE EXTINGUISHERS

TABLE 3-2.1 - FIRE EXTINGUISHER SIZE AND PLACEMENT FOR CLASS A HAZARDS

	LIGHT (LOW) HAZARD OCCUPANCY	ORDINARY (MODERATE) HAZARD OCCUPANCY	EXTRA (HIGH) HAZARD OCCUPANCY
MINIMUM RATED SINGLE EXTINGUISHER	2-A	2-A	4-A
MAXIMUM FLOOR AREA PER UNIT OF A	3000 SF.	1500 SF.	1000 SF.
MAXIMUM FLOOR AREA FOR EXTINGUISHER	11,250 SF.	11,250 SF.	11,250 SF.
MAXIMUM TRAVEL DISTANCE TO EXTINGUISHER	75 FT.	75 FT.	75 FT.

LEGEND

ROOM NAME
NUMBER

OCCUPANCY TYPE
XXX SF / OCC. SF

ROOM - OCCUPANCY INFORMATION

100 FT. DISTANCE TRAVELED (FEET)

NUMBER OF OCCUPANTS EXITING

PATH OF EGRESS TRAVEL

DIRECTION OF EGRESS TRAVEL

FE FIRE EXTINGUISHER

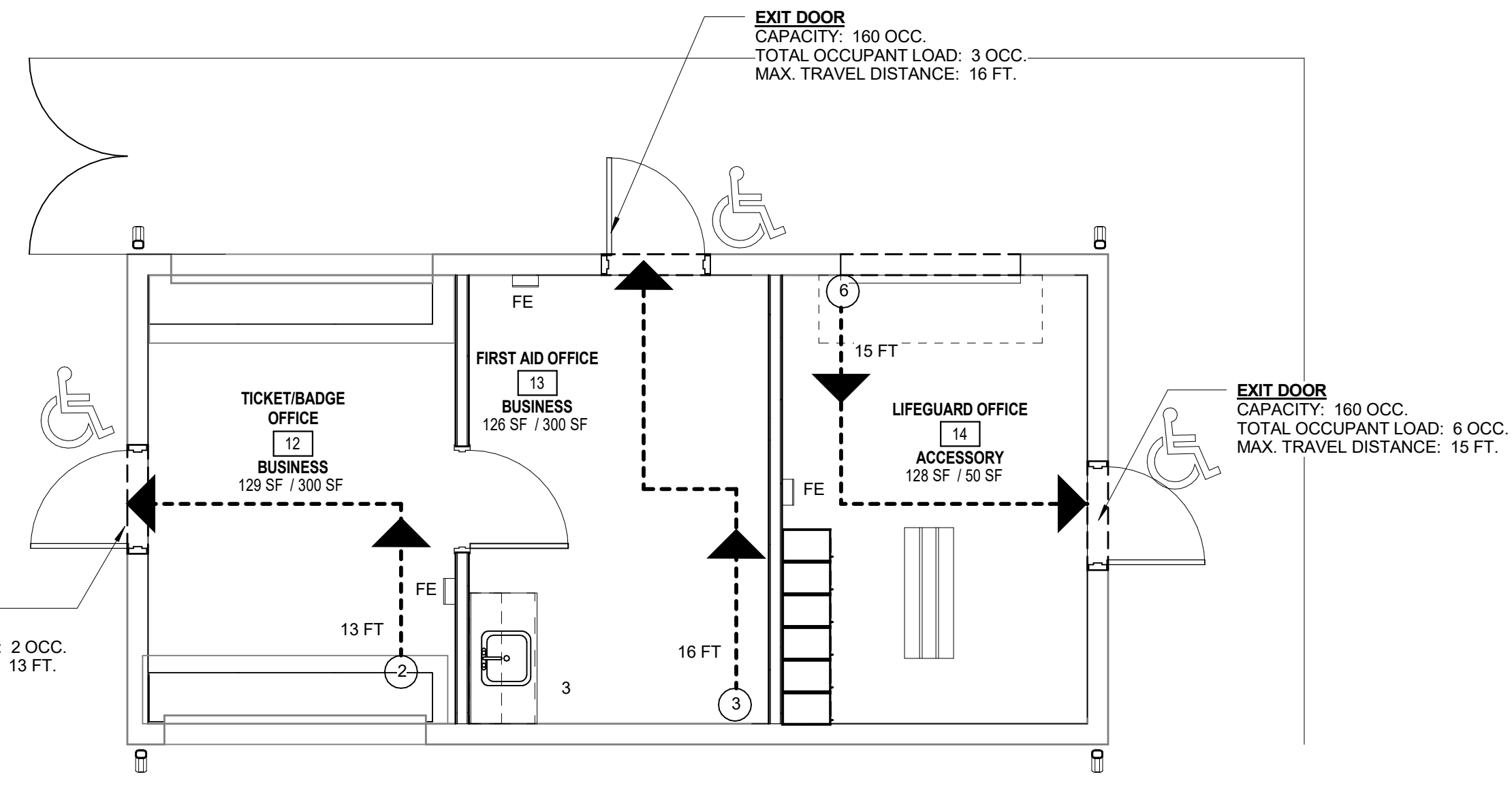
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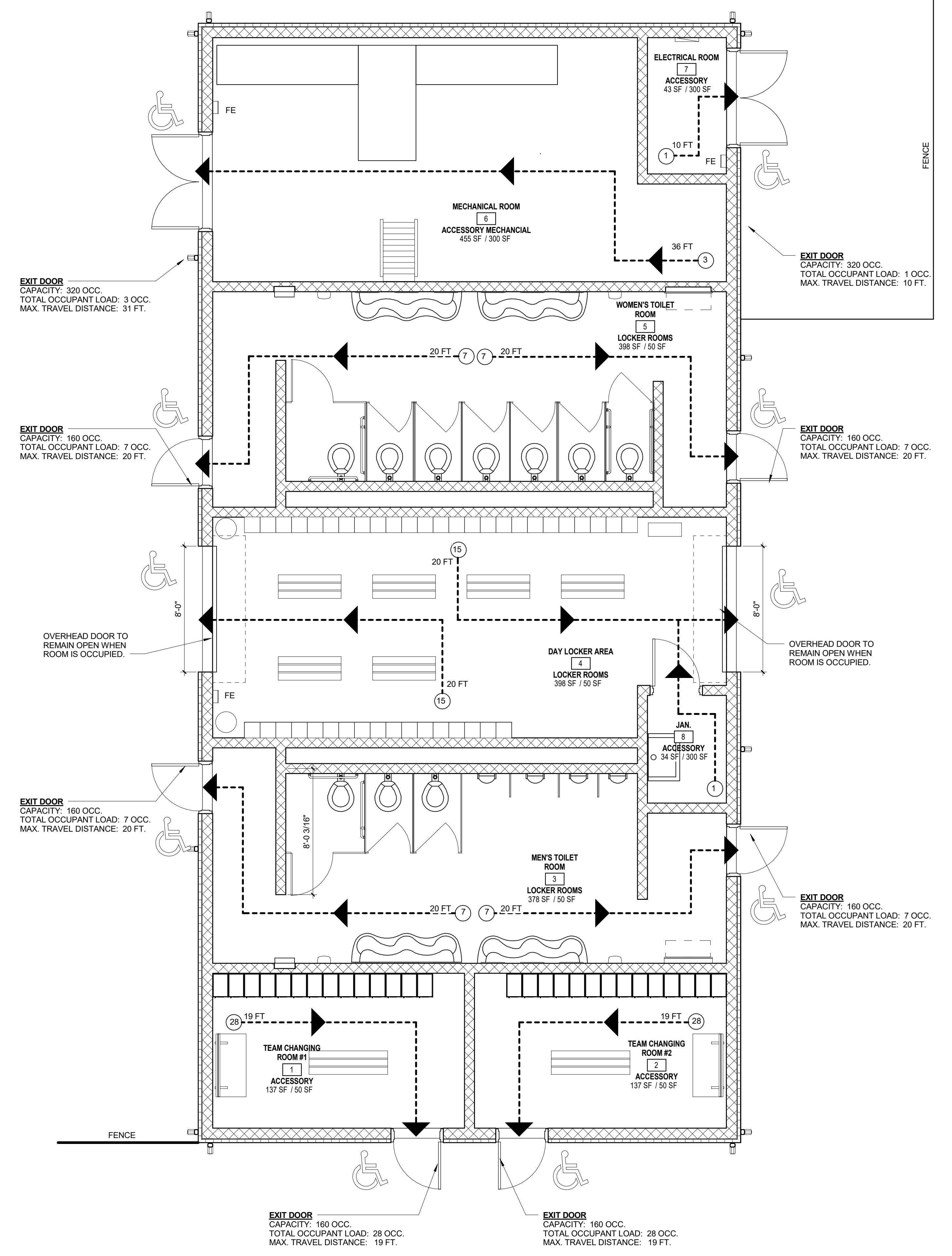
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1 EGRESS FLOOR PLAN - EXISTING BUILDING
SCALE: 1/4" = 1'-0"



2 EGRESS FLOOR PLAN - NEW BUILDING
SCALE: 1/4" = 1'-0"

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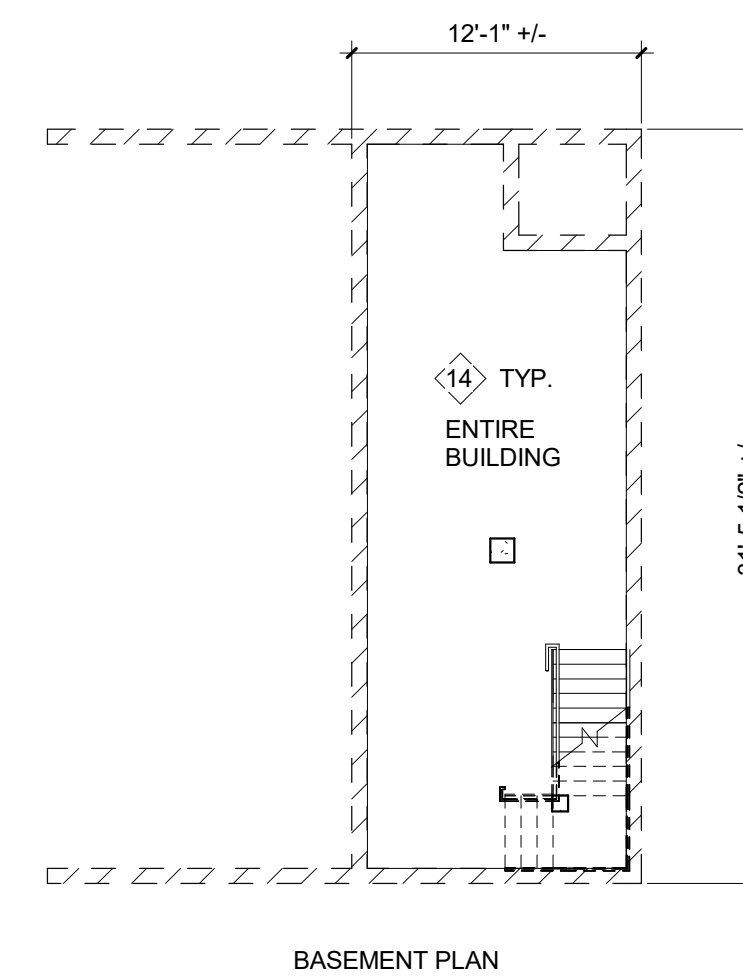
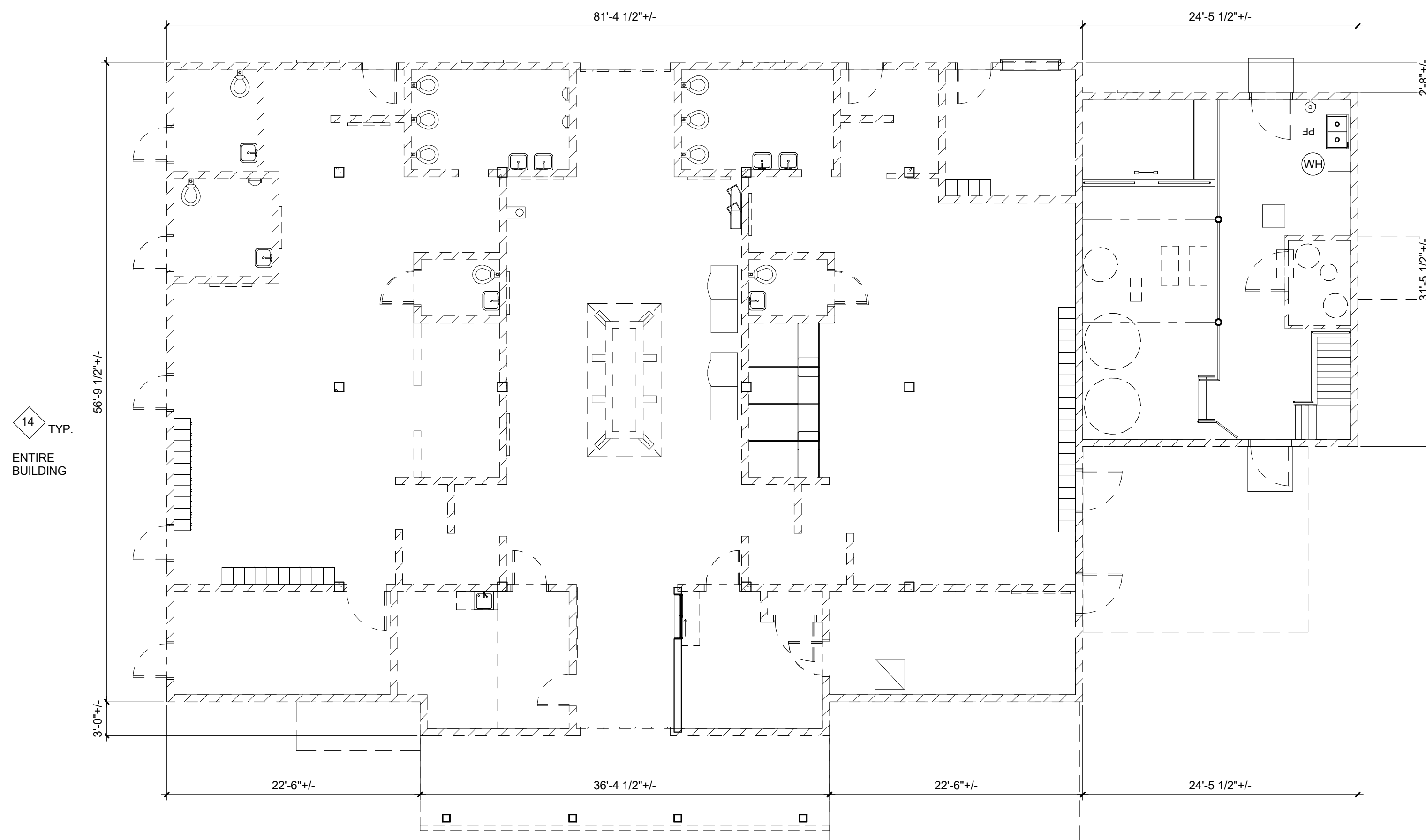
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Scale AS INDICATED	USA Project No. 2014-110
Drawing Date 09.26.17	Drawing No. A-011
Drawn By KAE	Checked By Apa



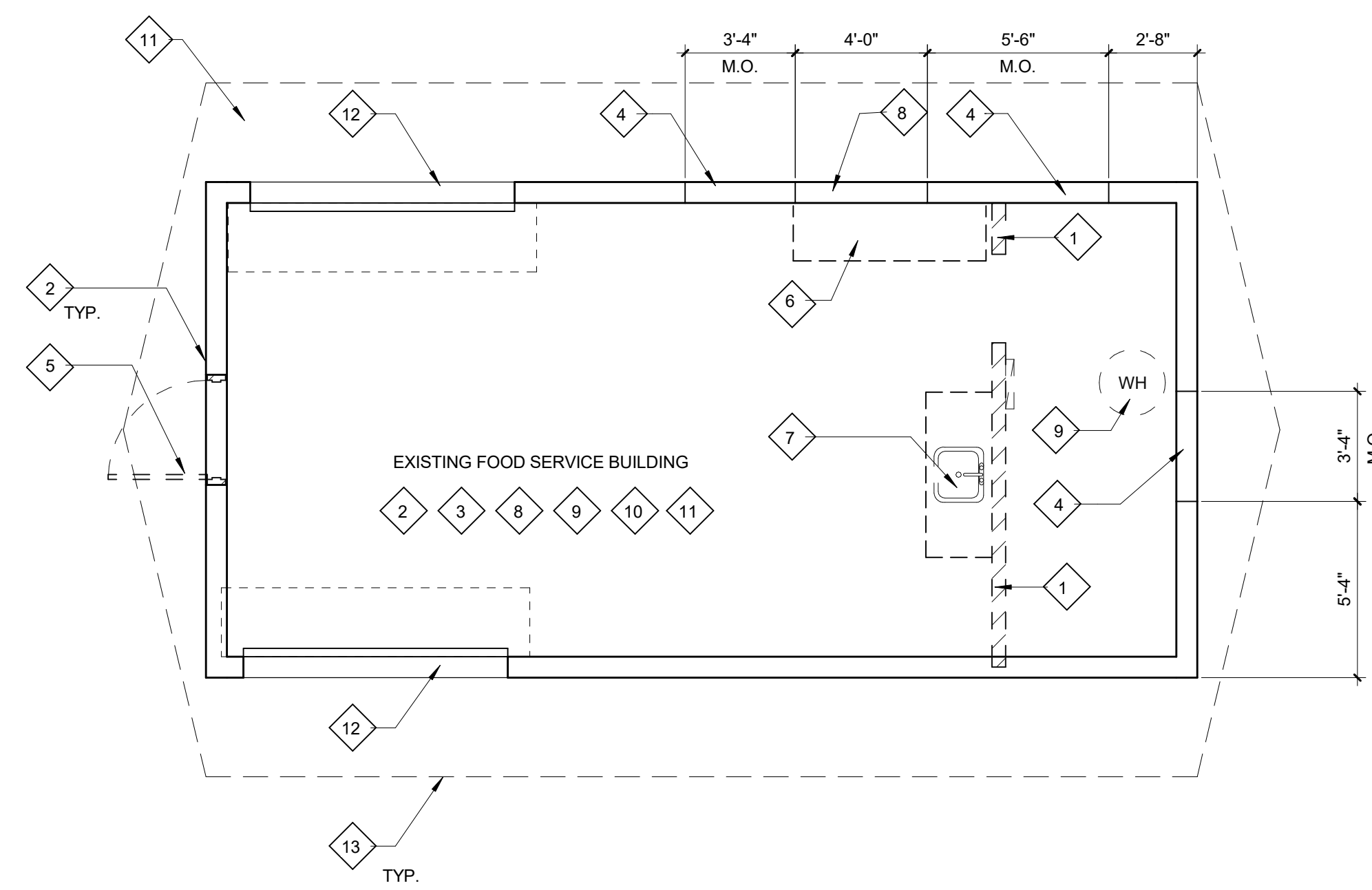
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1 DEMOLITION PLAN - EXISTING POOL BUILDING
SCALE: 1/8" = 1'-0"



2 DEMOLITION PLAN - EXISTING FOOD SERVICE BUILDING
SCALE: 1/4" = 1'-0"

SELECTIVE DEMOLITION LEGEND:

- X DEMOLITION SCOPE OF WORK ITEM TYPICAL THROUGHOUT ENTIRE ROOM/AREA
- X DEMOLITION SCOPE OF WORK ITEM AT A SPECIFIC LOCATION
- 1 REMOVE EXISTING WALL IN ITS ENTIRETY. PATCH AND REPAIR AREAS TO RECEIVE FINISHES.
- 2 REMOVE EXISTING LIGHT FIXTURES IN THEIR ENTIRETY. PATCH AND REPAIR ADJACENT SURFACES TO RECEIVE NEW FINISHES. COORDINATE WITH MEP DRAWINGS.
- 3 SAW CUT CONCRETE FLOOR AS REQUIRED TO REMOVE EXISTING FLOOR CLEANOUTS. REFER TO PLUMBING DRAWINGS FOR MORE INFORMATION.
- 4 REMOVE EXISTING PORTION OF WALL IN ITS ENTIRETY. PATCH AND REPAIR AREAS TO RECEIVE FINISHES. COORDINATE WITH DOOR SCHEDULE.
- 5 REMOVE EXISTING DOOR AND HARDWARE IN THEIR ENTIRETY. DOOR FRAME IS TO REMAIN. PREPARE FOR INSTALLATION OF NEW DOOR AND HARDWARE IN EXISTING FRAME. SEE DOOR SCHEDULE FOR MORE INFORMATION.
- 6 REMOVE EXISTING KITCHEN EQUIPMENT, HOODS, WIRING AND ACCESSORIES IN THEIR ENTIRETY. PATCH AND REPAIR AREAS TO RECEIVE FINISHES. COORDINATE WITH MEP DRAWINGS.
- 7 REMOVE EXISTING SINK / CASEWORK AND ALL THEIR COMPONENTS IN THEIR ENTIRETY. PATCH AND REPAIR ADJACENT SURFACES AS REQUIRED. COORDINATE WITH MEP DRAWINGS.
- 8 REMOVE EXISTING MECHANICAL EQUIPMENT, DUCTWORK, PIPING, FANS AND ANY THRU-WALL PENETRATIONS AS SHOWN ON MEP DRAWINGS. PATCH AND REPAIR ADJACENT SURFACES AS REQUIRED.
- 9 REMOVE EXISTING HOT WATER HEATER AND ALL ITS COMPONENTS IN THEIR ENTIRETY. PATCH AND REPAIR ADJACENT SURFACES AS REQUIRED. COORDINATE WITH MEP DRAWINGS.
- 10 REMOVE ROOF SHINGLES SYSTEM, DOWN TO EXISTING PLYWOOD SHEATHING, IN ITS ENTIRETY. REMOVE ALL DAMAGED PLYWOOD SHEATHING.
- 11 PATCH AND REPAIR EXISTING WALLS / RAFTERS AS REQUIRED TO RECEIVE NEW PAINT FINISH.
- 12 REMOVE EXISTING SILLS IN THEIR ENTIRETY.
- 13 REMOVE EXISTING FASCIA IN THEIR ENTIRETY.
- 14 RAZE ENTIRE EXISTING POOL BUILDING. COORDINATE WITH UTILITY COMPANY ALL SERVICES SHUT OFF AND NEW WORK AS PER MEP DRAWINGS. COUNTY HAS FILL AS REQUIRED. FILL TO BE DELIVERED BY COUNTY AND INSTALLED / PLACED BY G.C. IN ACCORDANCE WITH LOCAL CODES.

GENERAL DEMOLITION NOTES:

1. DO NOT CONSIDER DEMOLITION AND ALTERATION NOTES TO BE ALL INCLUSIVE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSPECT AND ASSESS EACH SPACE AND TO FULFILL THE INTENT OF THE WORK INDICATED BY THE CONTRACT DOCUMENTS. VERIFY ALL DIMENSIONS WITHIN THE CONTRACT LIMITS. BRING DEVIATIONS FROM THE CONTRACT DOCUMENTS TO THE ATTENTION OF THE ARCHITECT. THE EXTENT OF DEMOLITION AND REMOVAL INCLUDES, BUT IS NOT LIMITED TO WORK SHOWN ON THE DRAWINGS. COORDINATE WITH MECHANICAL, ELECTRICAL, PLUMBING & STRUCTURAL DRAWINGS.
2. PATCH AND REPAIR ALL ADJACENT SURFACES WHICH ARE AFFECTED BY THE DEMOLITION OR REMOVAL OF ACCESSORIES TO THEIR ORIGINAL FORM AND PREPARE FOR NEW FINISH / SURFACE. COORDINATE WITH DRAWINGS.
3. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR DAILY CLEANUP OF CONSTRUCTION DEBRIS.
4. BEFORE DEMOLITION BEGINS, CONTRACTOR SHALL COORDINATE SEQUENCE AND SCHEDULES FOR ALL WORK AND RELOCATION OR DISPOSAL OF ALL MATERIALS WITH OWNER.
5. DEMOLITION PLANS ARE DIAGRAMMATIC. PRIOR TO SUBMITTING BID, GENERAL CONTRACTORS SHALL FAMILIARIZE THEMSELVES WITH EXISTING CONDITIONS AND BRING ANY AREAS IN QUESTION TO THE ATTENTION OF THE ARCHITECT.
6. EXISTING ONE STORY POOL BUILDING (AT LOCATION OF NEW ONE STORY BUILDING) IS TO BE REMOVED IN ITS ENTIRETY. COORDINATE WITH MEP AND CIVIL DRAWINGS FOR DEMOLITION NOTES.

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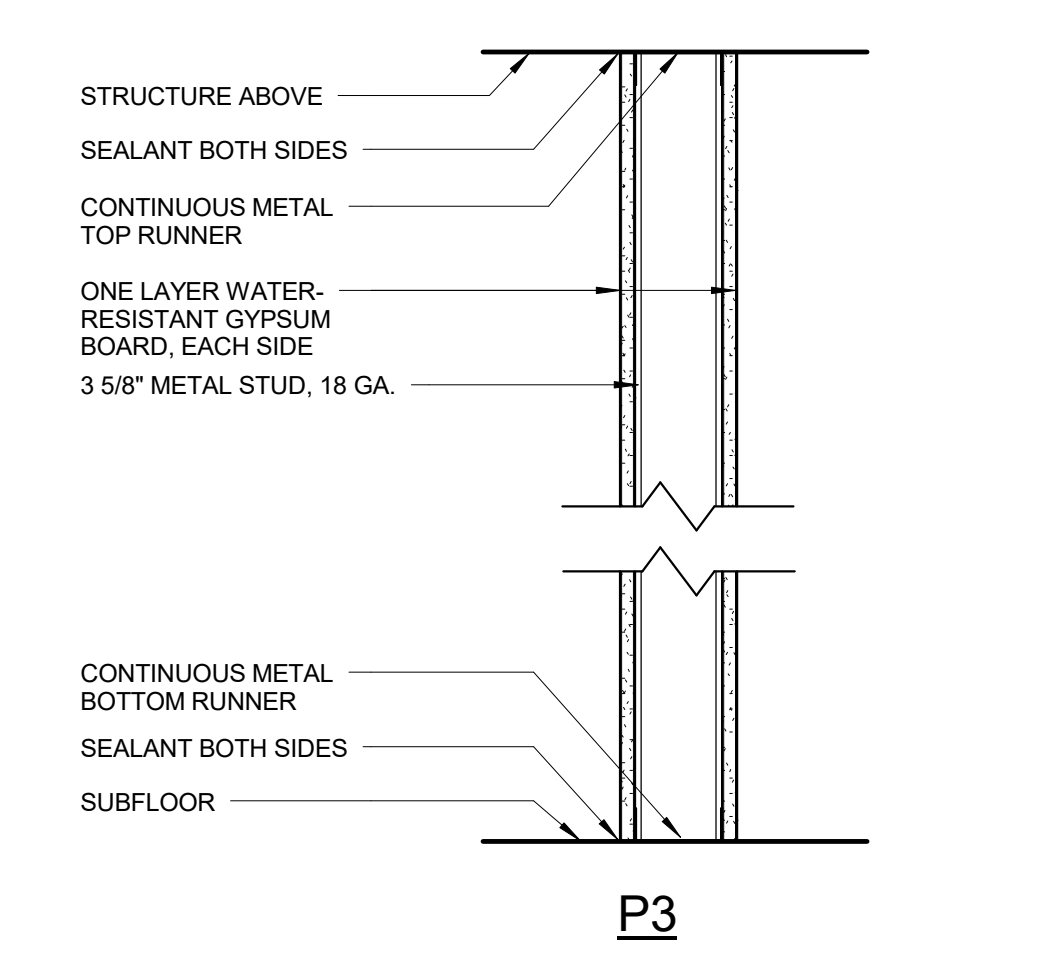
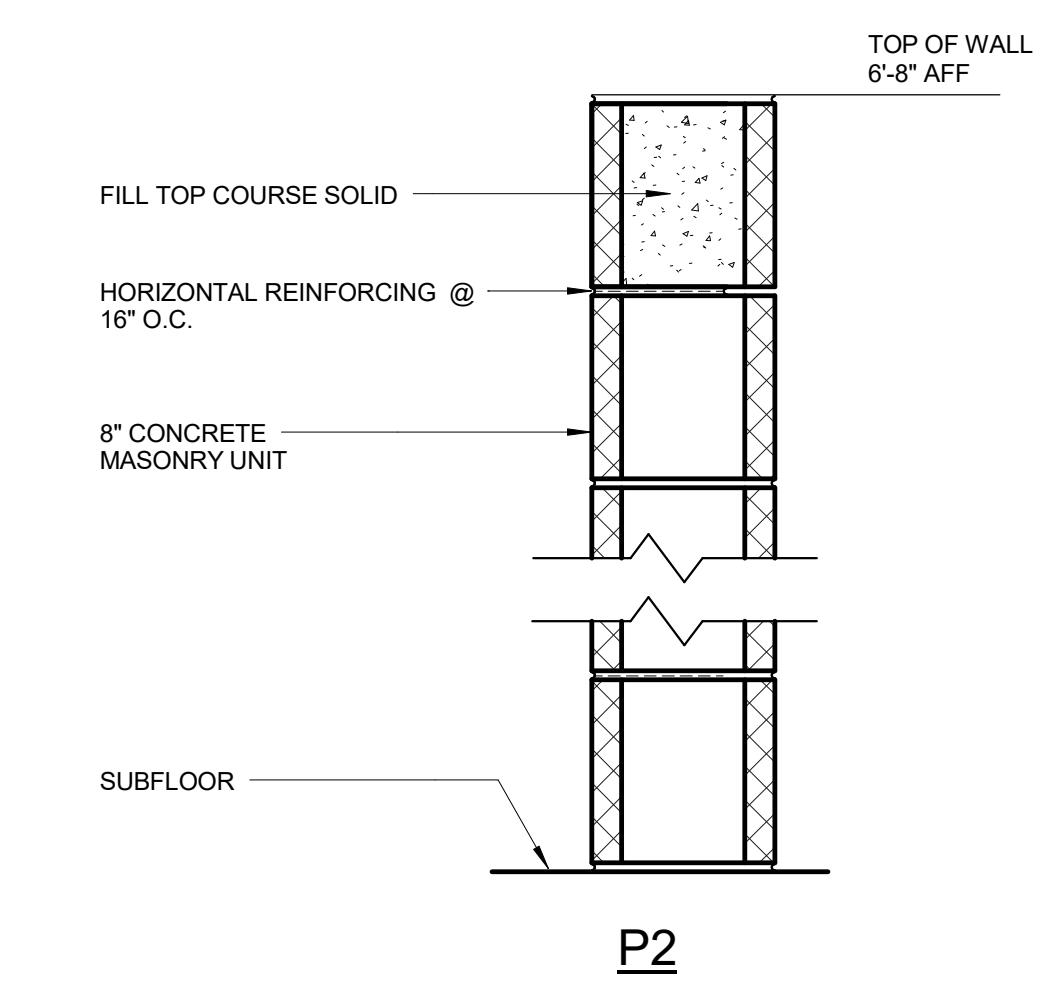
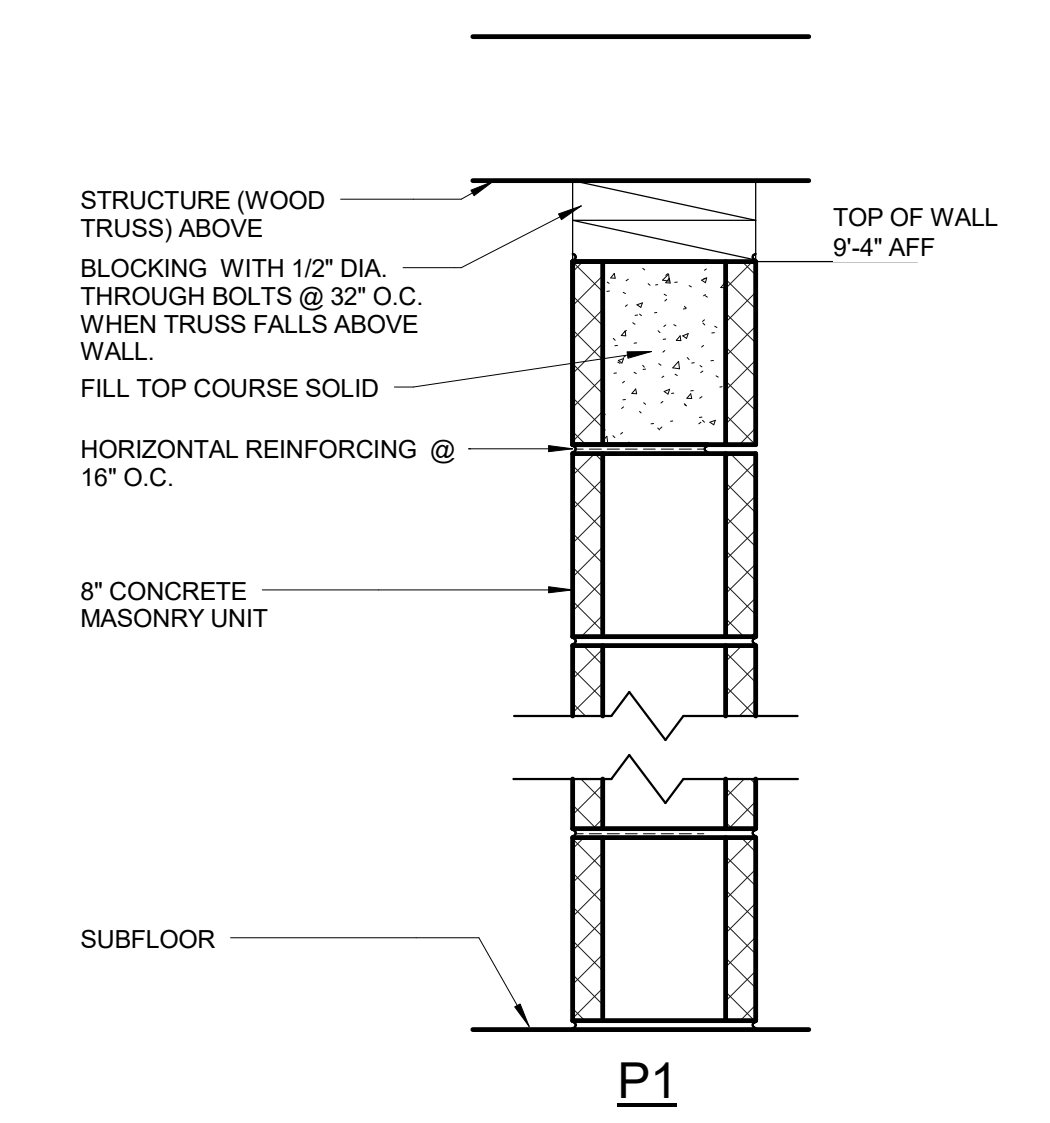
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DEMOLITION PLAN

Scale AS INDICATED USA Project No. 2014-110

Drawing Date 09.26.17 Drawing No.

Drawn By KAE Checked By ApA A-050



A PARTITION TYPES
SCALE: N.T.S.

CONSTRUCTION NOTES FOR EXISTING BUILDING:

- CLEAN EXTERIOR MASONRY WALLS THROUGHOUT THE ENTIRE BUILDING TO REMOVE DIRT, STAINING, CARBON AND POLLUTION DEPOSITS USING "STANDARD MASONRY CLEANING" TECHNIQUES AS DESCRIBED IN THE SPECIFICATIONS.
- POWER WASH ENTIRETY OF EXTERIOR BUILDING'S MASONRY WALLS TO REMOVE ANY LOOSE MATERIAL AND / OR REPLACE ANY AND ALL CRACKED / BROCKEN CMU BLOCKS AND REPOINT MORTAR JOINTS AS NECESSARY.
- INSTALL NEW GUTTER, BOOTS AND DOWNSPOUTS AS SHOWN.
- INSTALL NEW LIGHT FIXTURE. SEE ELECTRICAL DRAWINGS.
- REMOVE EXISTING ABANDONED METAL ANCHORS, BRACKETS AND EXPOSED FASTENERS THROUGHOUT THE ENTIRE EXTERIOR OF THE BUILDING. FILL ANY OPEN HOLES AND VOIDS FROM NEWLY REMOVED OR PREVIOUSLY REMOVED ANCHORS TO MATCH ADJACENT SURFACES. VERIFY IN FIELD.
- PREPARE SURFACES FOR NEW ALUMINUM COVERED FASCIA.
- PATCH AND REPAIR EXISTING WALLS TO RECEIVE NEW PAINT FINISH.
- INFILL MECHANICAL EQUIPMENT VOID TO MATCH EXISTING ADJACENT CONSTRUCTION & FINISHES. TOOTH IN CMU, TYP.
- INSTALL NEW SOLID SURFACE SILL.

AA

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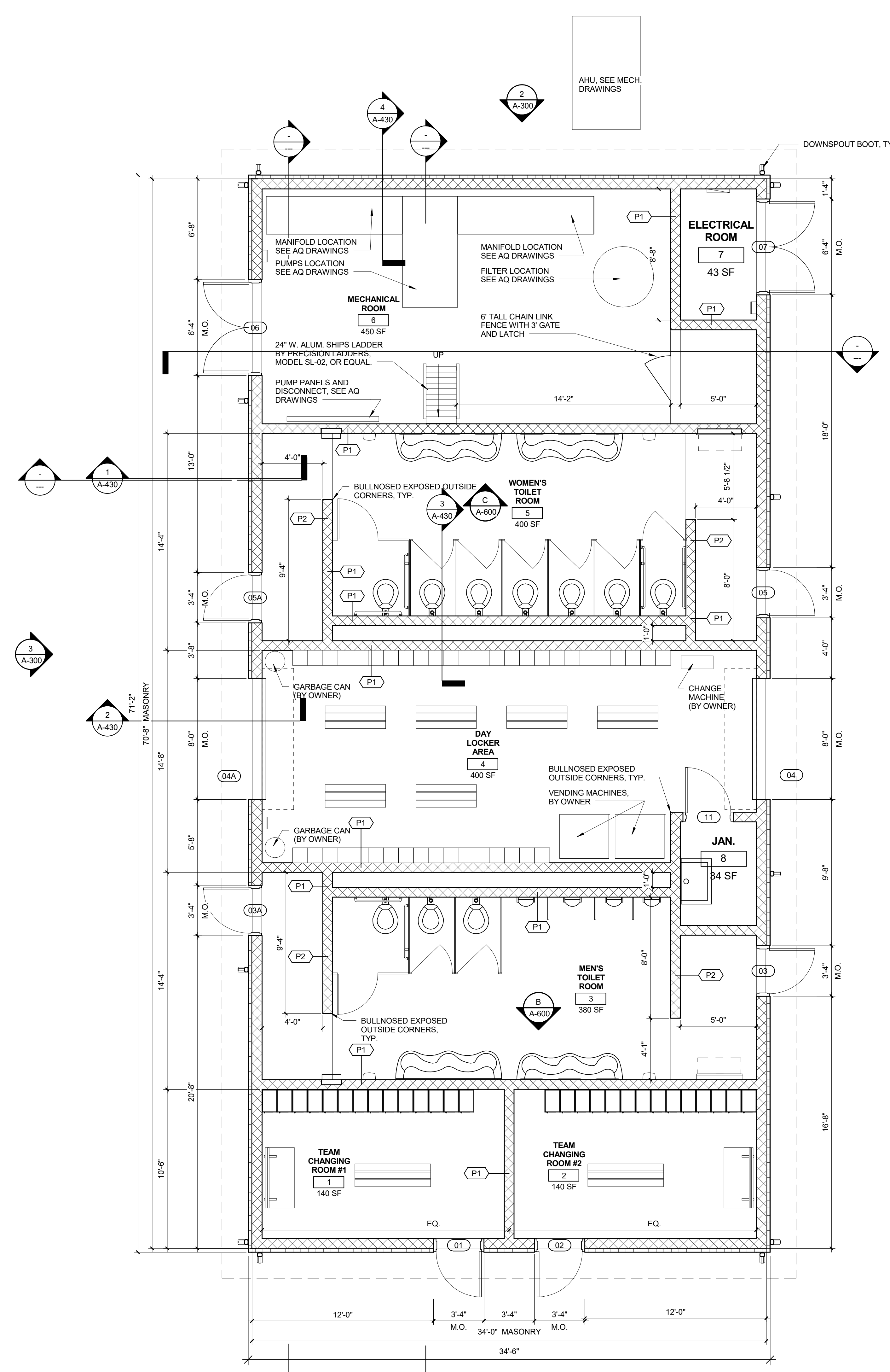
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DEMOLITION AND NEW CONSTRUCTION
AT
WHEELER PARK
FOR THE
COUNTY OF UNION

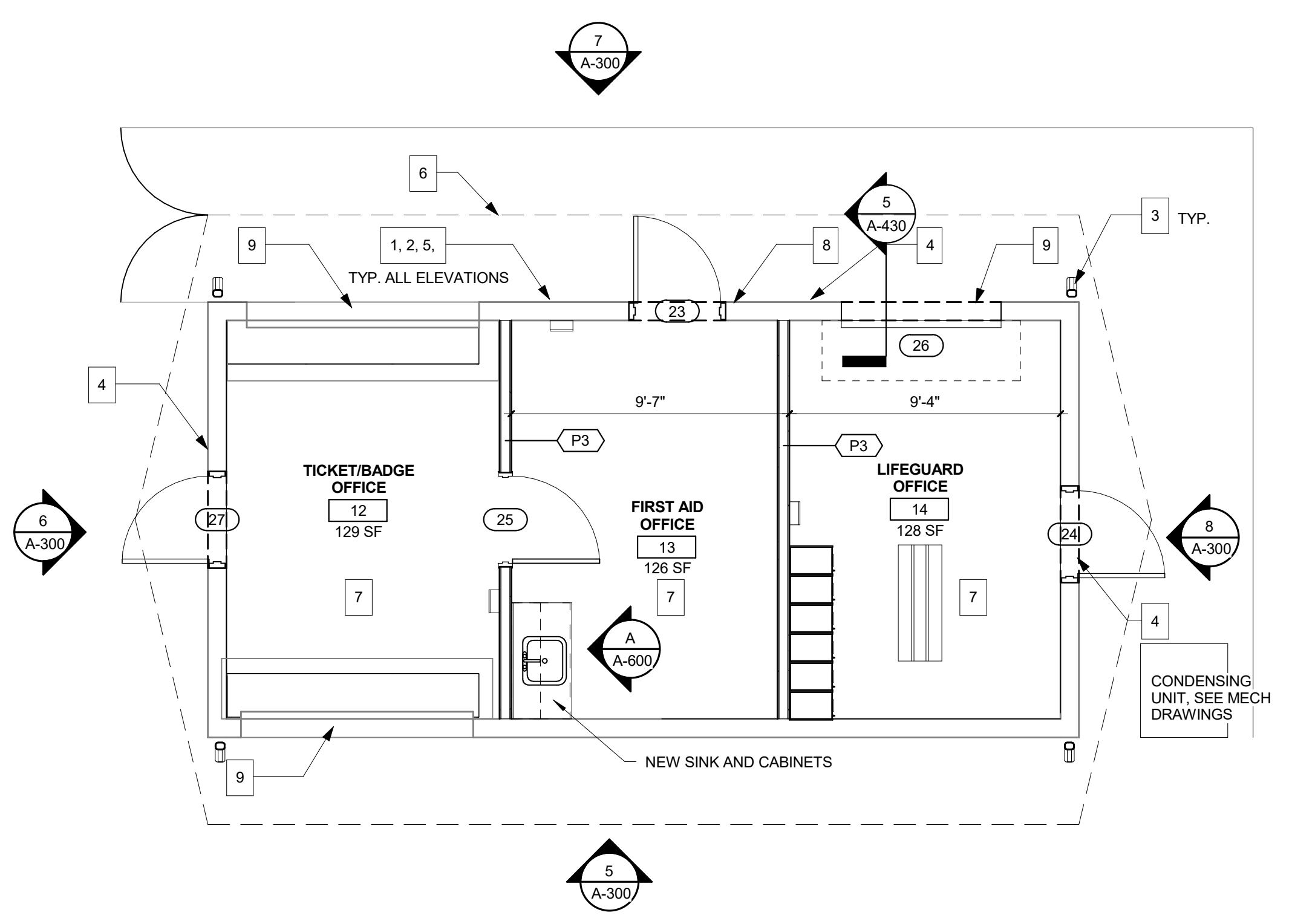
No.	Date	Issue or Revision
1	09.26.17	BID SET

Drawing Title FLOOR PLANS AND PARTITION TYPES	
Scale AS INDICATED	USA Project No. 2014-110
Drawing Date 09.26.17	Drawing No. A-100
Drawn By KAE	Checked By APA

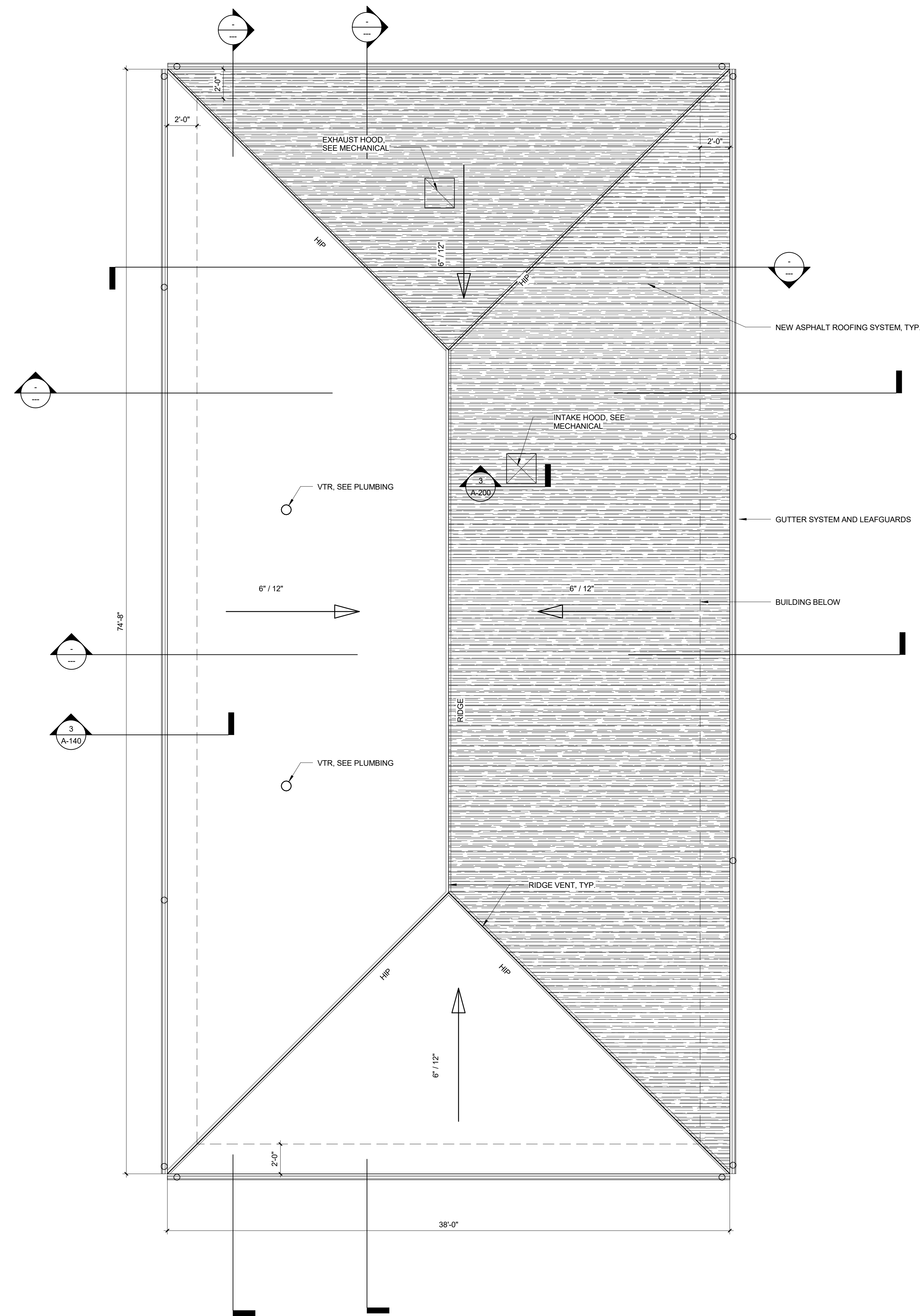
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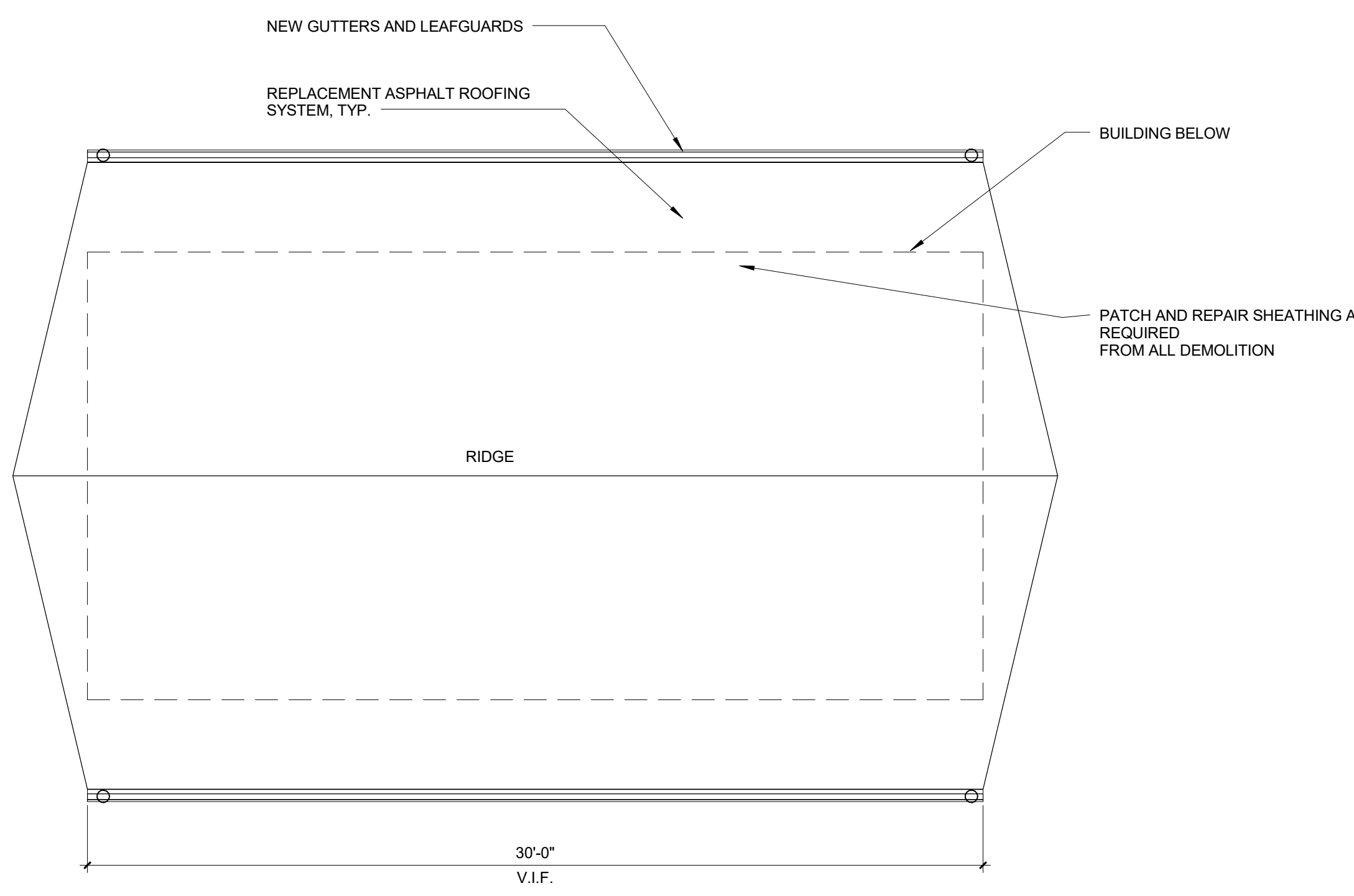
1 FLOOR PLAN - NEW BUILDING
SCALE: 1/4" = 1'-0"



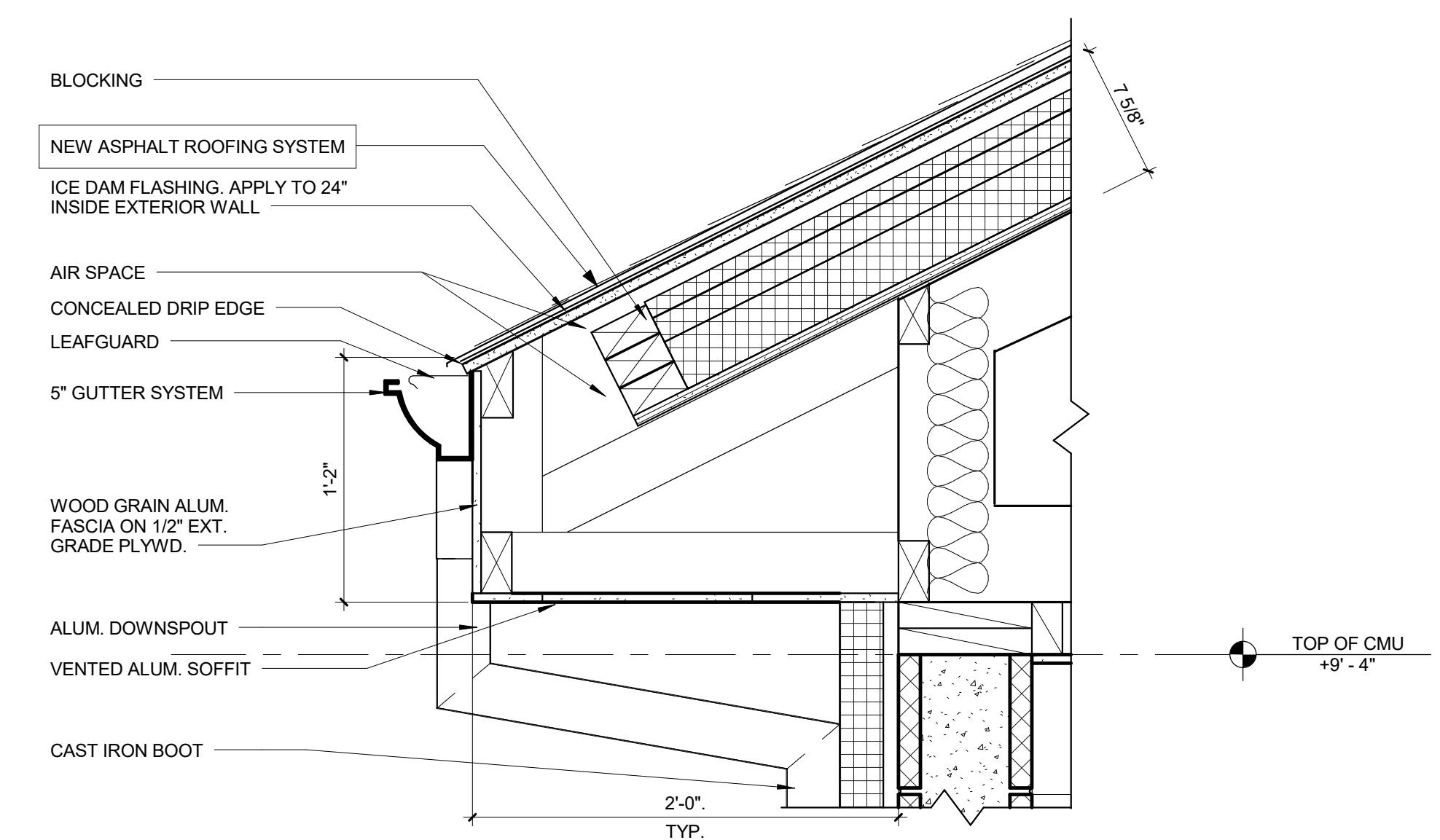
2 FLOOR PLAN - EXISTING BUILDING
SCALE: 1/4" = 1'-0"



1 ROOF PLAN - NEW BUILDING
SCALE: 1/4" = 1'-0"



2 ROOF PLAN - EXISTING BUILDING
SCALE: 1/4" = 1'-0"



3 SECTION DETAIL
SCALE: 1 1/2" = 1'-0"

NEW ASPHALT ROOFING SYSTEM (MINIMUM R30)

- ASPHALT SHINGLES
- FELT UNDERLAYMENT
- WATERPROOFING MEMBRANE
- 2 1/2" VENTED NAILABLE INSULATION PANELS (MIN. R 5.7)
- COMPOSED OF:
 - 7/16" OSB
 - 1" AIR SPACE
 - POLYISO BOARD
 - 1) LAYER 3" THICK RIGID INSULATION
 - 1) LAYER 1 1/2" THICK RIGID INSULATION
 - 5/8" PLYWOOD ROOF SHEATHING: APA RATED 40/20

REPLACEMENT ASPHALT ROOFING SYSTEM

- ASPHALT SHINGLES
- FELT UNDERLAYMENT
- WATERPROOFING MEMBRANE
- 5/8" PLYWOOD ROOF SHEATHING: APA RATED 40/20
- (REPLACE AS REQUIRED)

GENERAL REQUIREMENTS:

- A - THE CONTRACTOR IS REQUIRED TO MEET ALL OF THE "BEST PRACTICE" REQUIREMENTS OF THE MANUFACTURER OF THE PRODUCTS, MATERIALS AND/OR SYSTEMS INCORPORATED IN THIS PROJECT. WHERE A SPECIFIC REQUIREMENT OF THE ARCHITECT IS IN VARIANCE TO A REQUIREMENT OF THE MANUFACTURER, THE GREATER QUANTITY OR QUALITY OF THE WORK SHALL BE PROVIDED.
- B - ALL PLUMBING VENTS THROUGH ROOF, ETC. ARE NOT SHOWN. IT IS THE CONTRACTOR'S RESPONSIBILITY TO EXTEND AND FLASH ALL SUCH PENETRATIONS TO MINIMUM HEIGHTS AS PER MANUFACTURER'S REQUIREMENTS, OR AS INDICATED ON THE DRAWINGS.
- C - AT ALL INTERIOR ROOF DRAINS, RAIN WATER LEADERS AND EXTERIOR GUTTERS & DOWNSPOUTS, "SNAKE-OUT" OR OTHERWISE CLEAN OUT DRAIN PIPING TO ENSURE PROPER OPERATION OF ALL DRAINS AND RAIN WATER LEADERS AT THE CONCLUSION OF THE PROJECT.
- D - PROVIDE FLASHING AT ALL CURB MOUNTED MECHANICAL EQUIPMENT, AND OTHER PENETRATIONS AS THEY OCCUR ON THE ROOF. MAINTAIN MINIMUM REQUIRED FLASHING HEIGHT ABOVE THE FINISHED ROOFING SURFACE SO THAT IT MEETS OR EXCEEDS MINIMUM HEIGHTS ALLOWED BY THE ARCHITECT AND/OR REQUIREMENTS OF THE MANUFACTURER OF THE PRODUCTS, MATERIALS AND/OR SYSTEMS.
- E - THE LOCATIONS OF MECHANICAL UNITS, FANS, AND CURBS, SHOWN ON THE DRAWINGS, ARE APPROXIMATE. IF A MECHANICAL UNIT FALLS IN / CREATES A VALLEY THEN THE CONTRACTOR SHALL CRICKET WATER FLOW AROUND THE UNIT AND/OR CURBS.
- F - ALL INTERSECTIONS OR OVERLAPPING OF THE ROOFING SYSTEM AND ADJACENT BUILDING ENVELOPE SYSTEMS, INCLUDING JOINTS BETWEEN DIFFERENT ITEMS AND MATERIALS, JOINTS SURROUNDING PENETRATIONS THROUGH MATERIALS, ETC. SHALL BE FILLED WITH COMPATIBLE JOINT SEALANTS. A SEPARATOR SHEET SHALL BE USED WHERE DISSIMILAR OR INCOMPATIBLE MATERIALS INTERSECT OR OVERLAP.
- G - ALL WOOD CURBS, BLOCKING, CANTS, SHEATHING, ETC. SHALL BE FIRE RETARDANT TREATED WOOD.
- H - CLEAN METAL DECKING FLUTES OF ANY DIRT, DUST AND DEBRIS PRIOR TO ROOFING.
- I - BLOCKING HEIGHTS SHOWN ON CURBS AND EDGE CONDITIONS ARE APPROXIMATE AND SHALL BE FIELD VERIFIED. CONTRACTOR SHALL PROVIDE ALL FULL DIMENSION BLOCKING AS INDICATED AND / OR REQUIRED.
- J - THE CONTRACTOR SHALL PROVIDE SEALANT ON ALL EXPOSED FASTENERS.
- K - THE CONTRACTOR, AT THE END OF EACH WORK DAY FOR THE ENTIRE CONTRACTED ROOF, SHALL PROVIDE A WEATHERTIGHT ROOFING SYSTEM.

AA

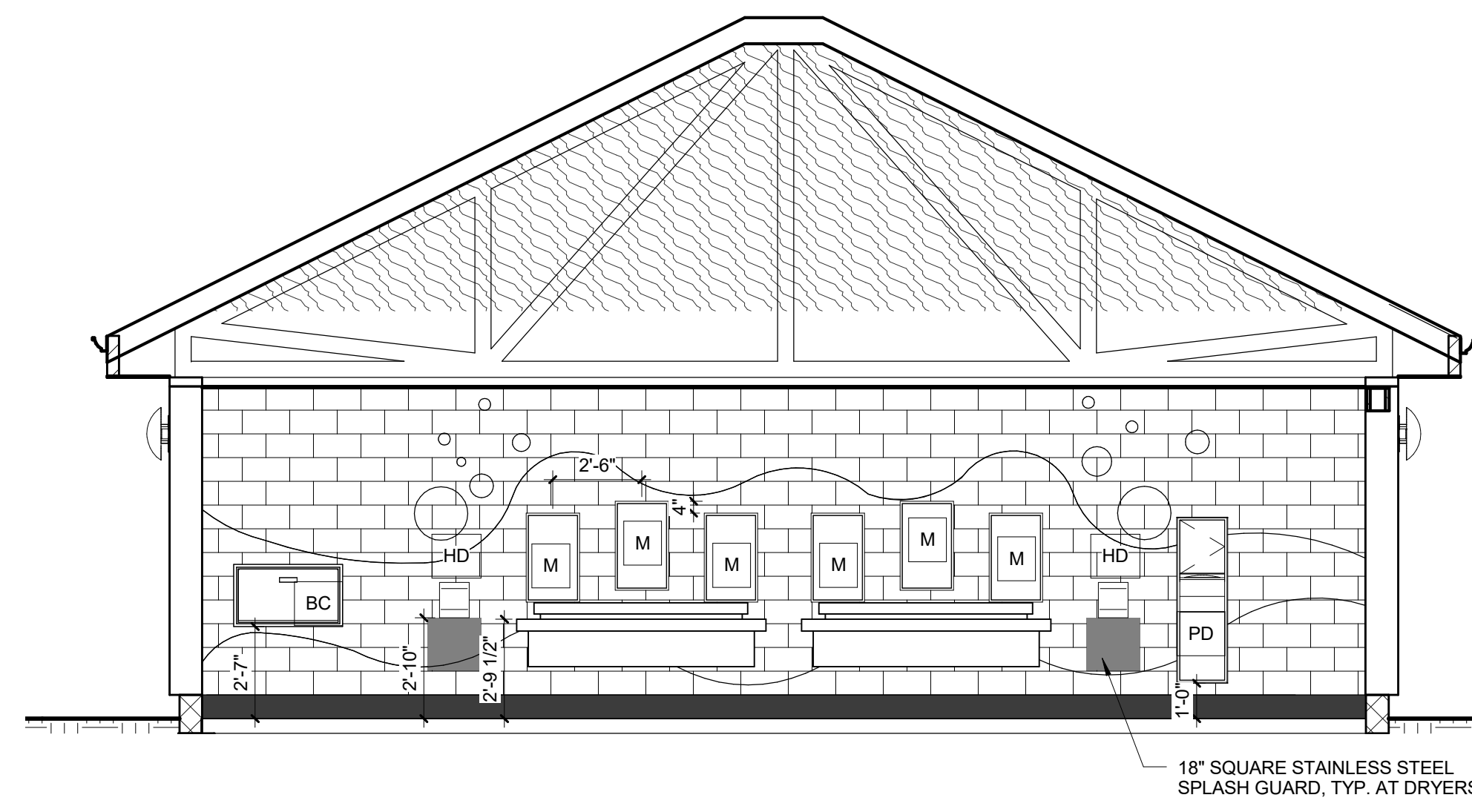
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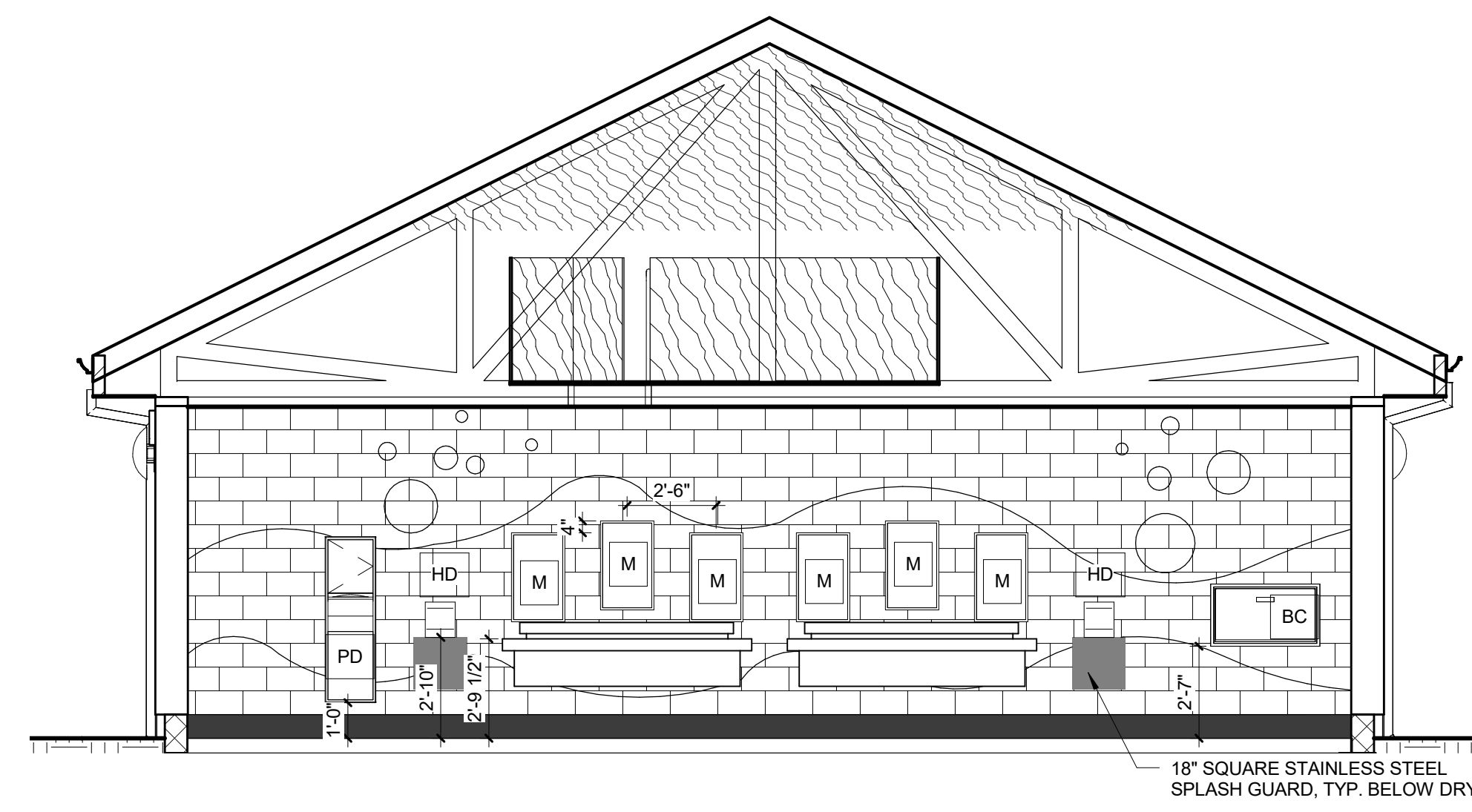
DEMOLITION AND NEW CONSTRUCTION
AT
WHEELER PARK
FOR THE
COUNTY OF UNION

1	09.26.17	BID SET
No.	Date	Issue or Revision

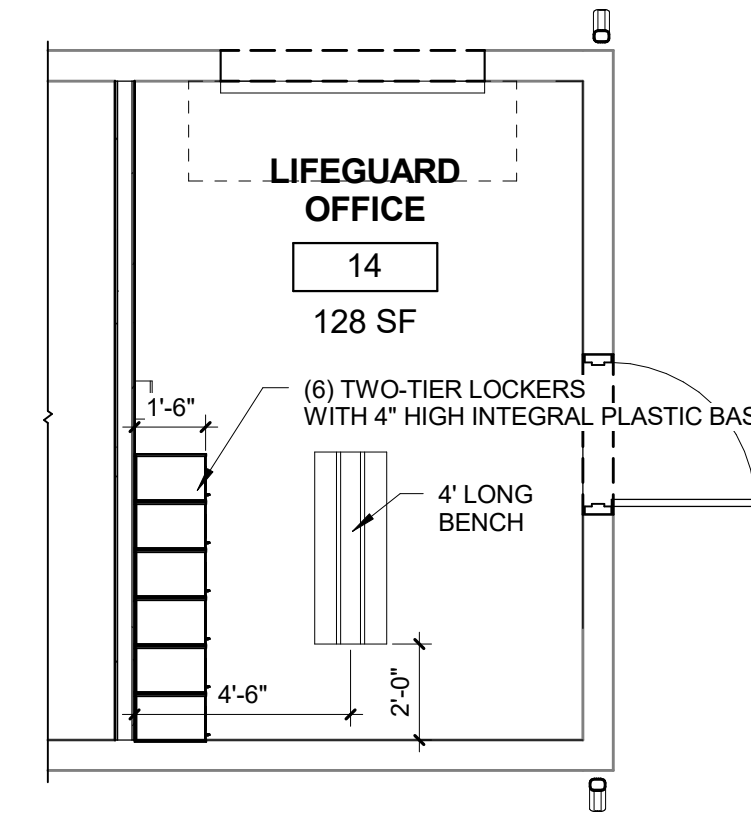
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Scale	USA Project No.
AS INDICATED	2014-110
Drawing Date	Drawing No.
09.26.17	A-140
Drawn By	Checked By
KAE	ApA



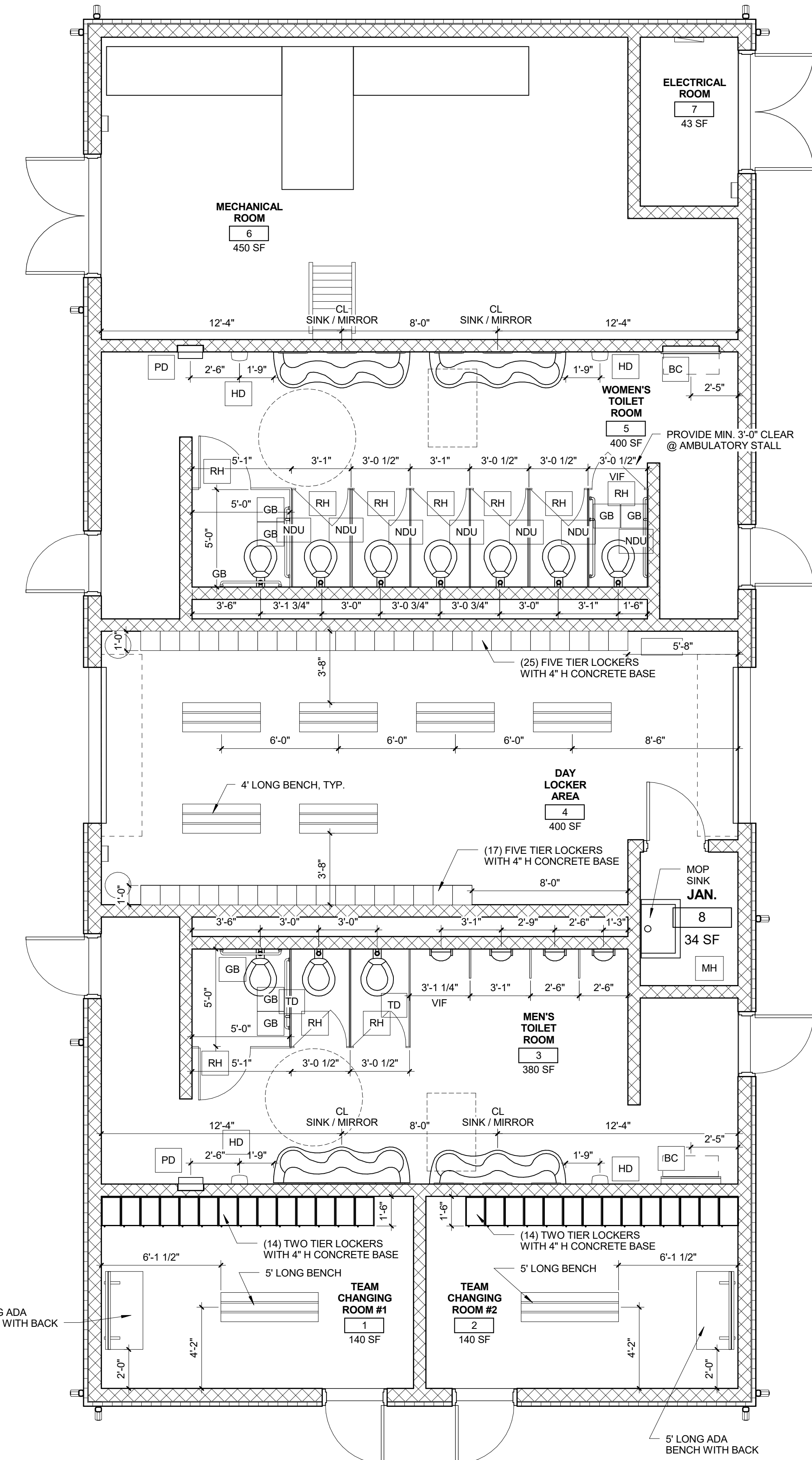
A ELEVATION - MEN
SCALE: 1/4" = 1'-0"



B ELEVATION - WOMEN
SCALE: 1/4" = 1'-0"

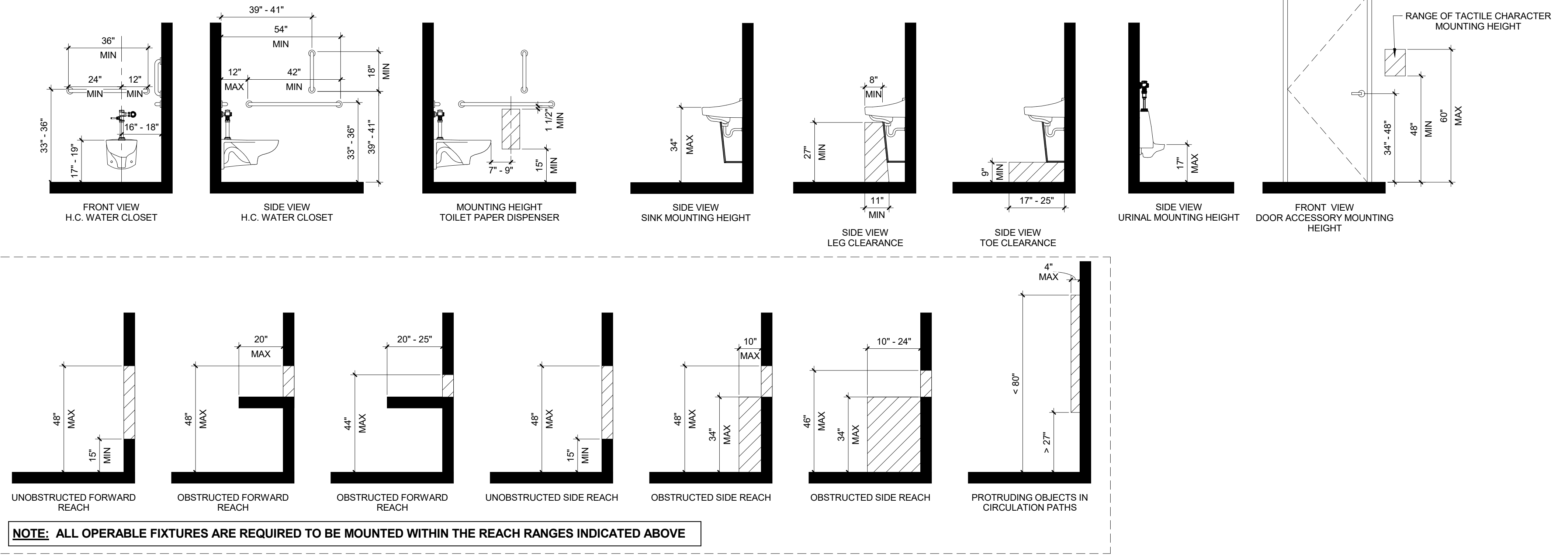


1 LOCKER ROOM PLAN - EXISTING BUILDING
SCALE: 1/4" = 1'-0"



2 TOILET & LOCKER ROOM PLANS - NEW BUILDING
SCALE: 1/4" = 1'-0"

BARRIER FREE LEGEND



NOTE: ALL OPERABLE FIXTURES ARE REQUIRED TO BE MOUNTED WITHIN THE REACH RANGES INDICATED ABOVE

TOILET ACCESSORY KEY

- [GB] GRAB BAR
- [HD] HAND DRYER
- [M] MIRROR
- [MH] MOP HOLDER
- [NDU] SANITARY NAPKIN DISPOSAL / T.P. DISPENSER
- [PD] PAPER TOWEL DISPENSER / WASTE
- [RH] ROBE HOOK
- [HD] HAND DRYER
- [TD] TOILET PAPER DISPENSER
- [BC] BABY CHANGING STATION

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DEMOLITION AND NEW CONSTRUCTION

AT
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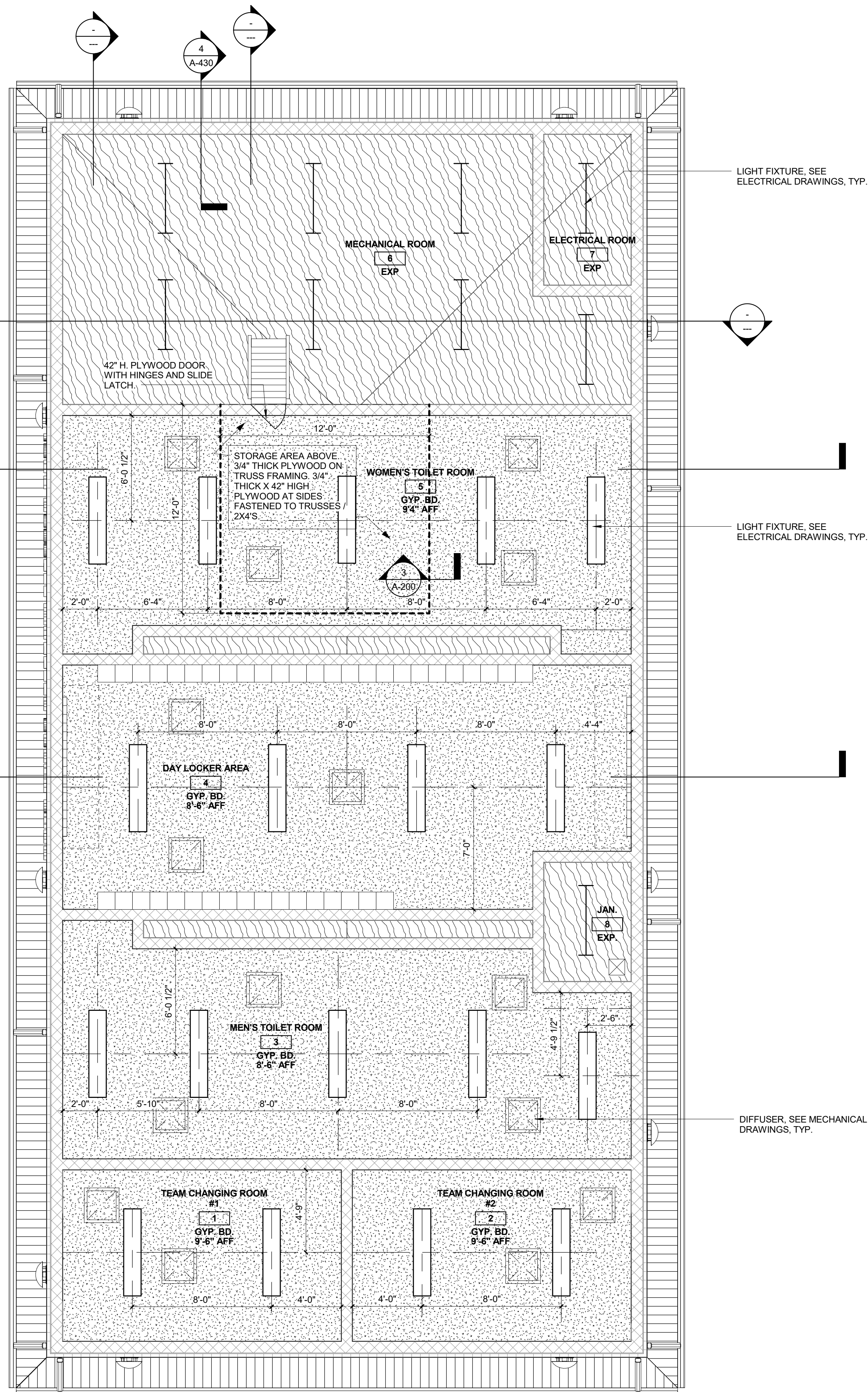
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**ENLARGED
TOILET & LOCKER
ROOM PLANS**

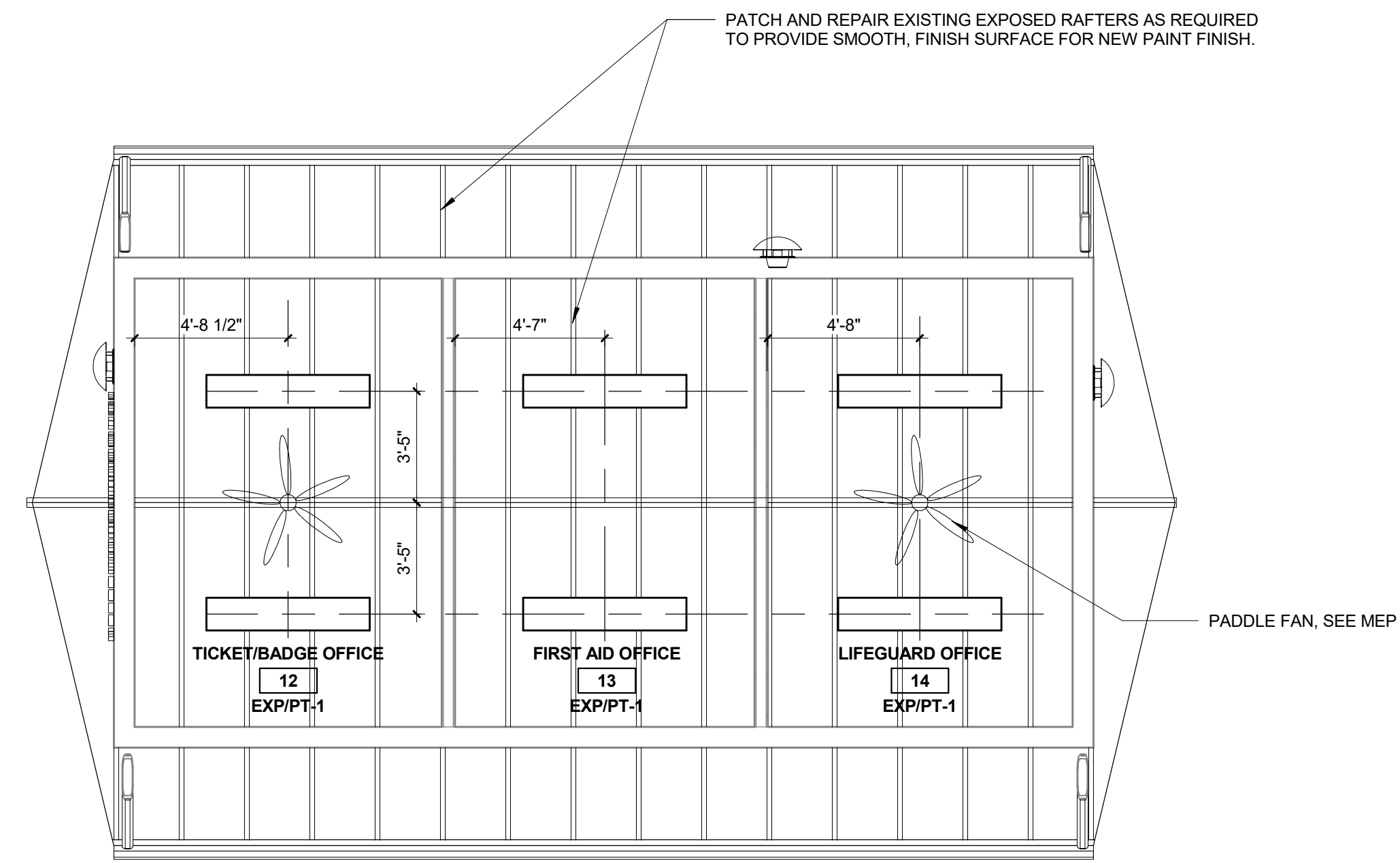
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Drawing Date 09.26.17 Drawing No.

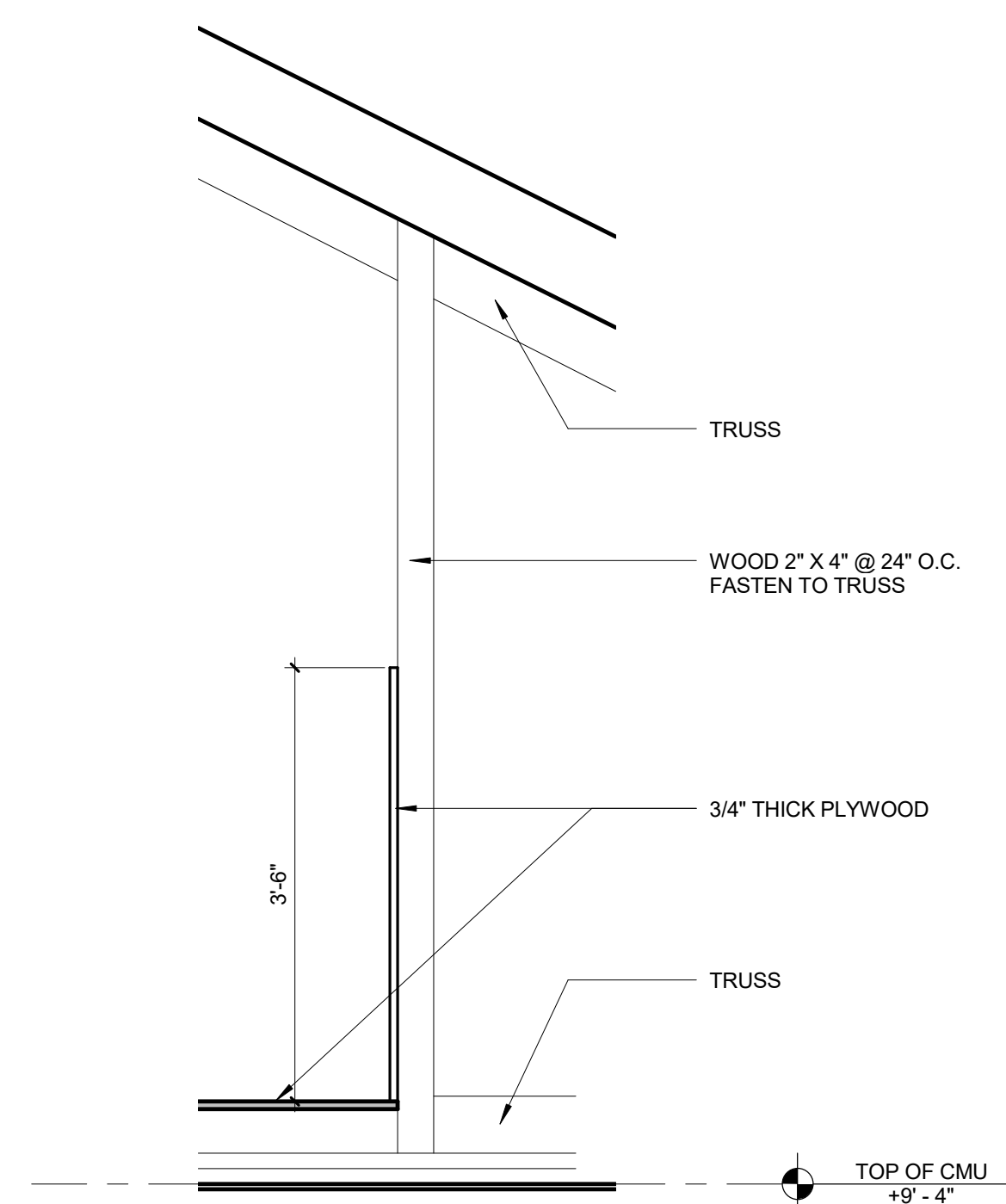
Drawn By KAE Checked By Apa A-160



1 CEILING PLAN - NEW BUILDING
SCALE: 1/4" = 1'-0"



2 CEILING PLAN - EXISTING BUILDING
SCALE: 1/4" = 1'-0"



3 STORAGE SECTION
SCALE: 3/4" = 1'-0"

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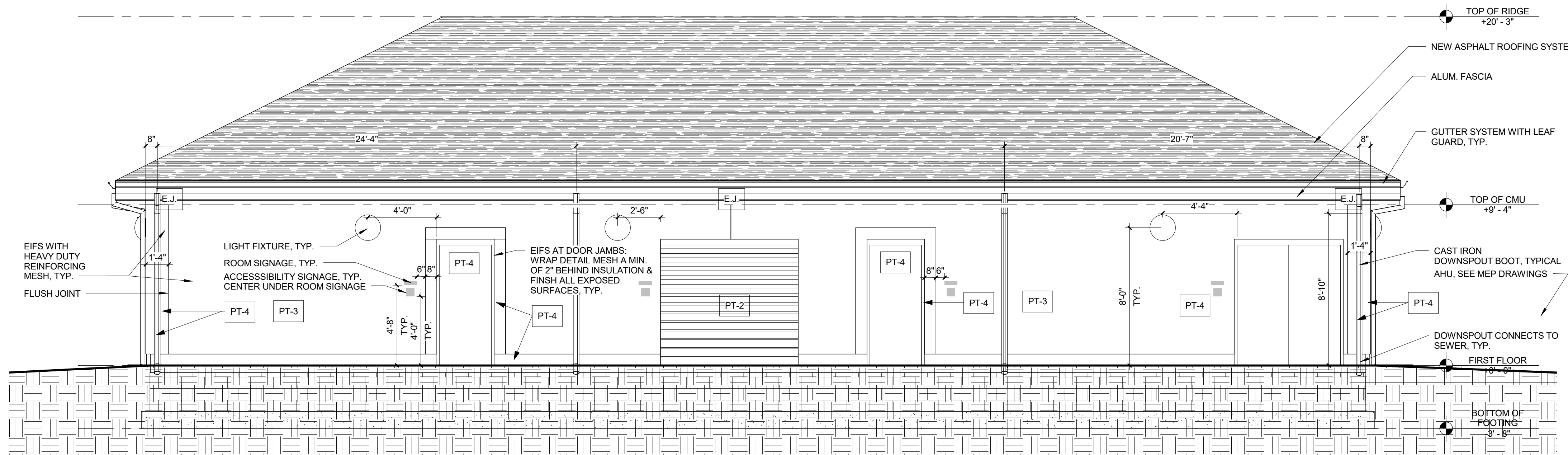
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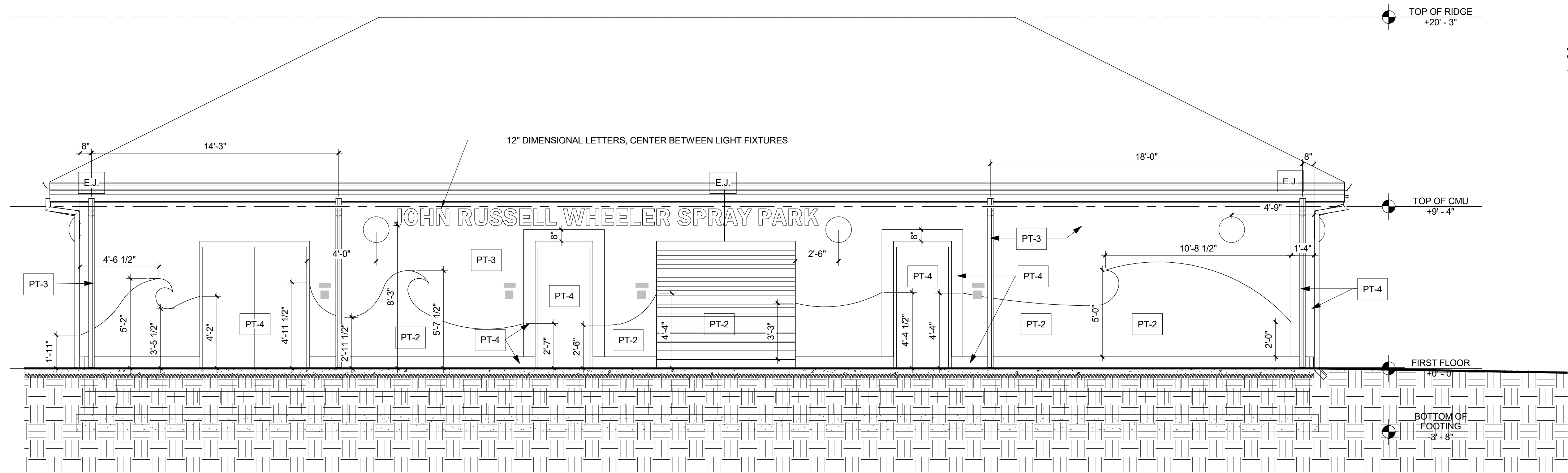
DEMOLITION AND NEW CONSTRUCTION
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No.	Date	Issue or Revision
1	09.26.17	BID SET

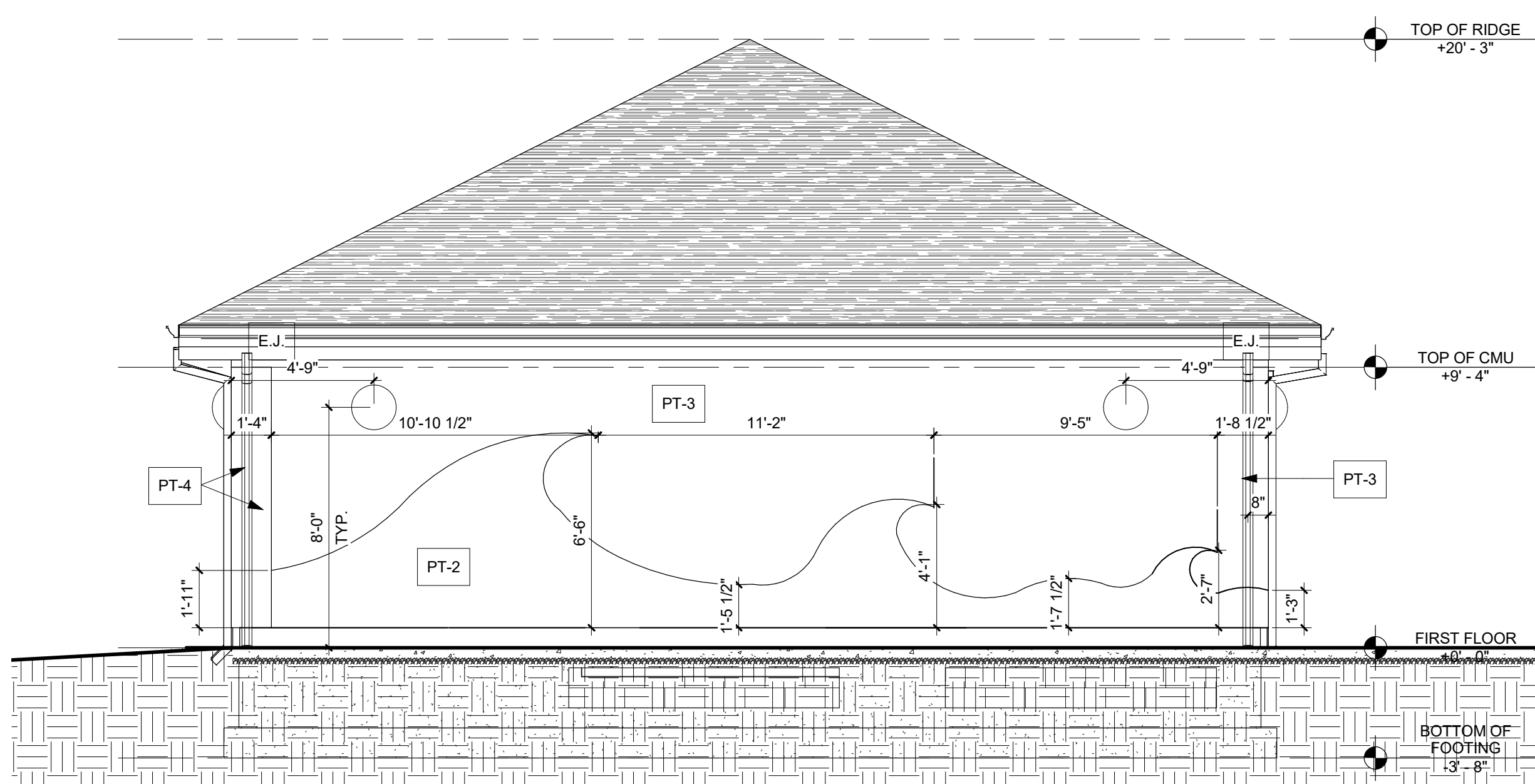
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CEILING PLANS	
Scale	USA Project No.
AS INDICATED	2014-110
Drawing Date	Drawing No.
09.26.17	A-200
Drawn By	Checked By
KAE	ApA



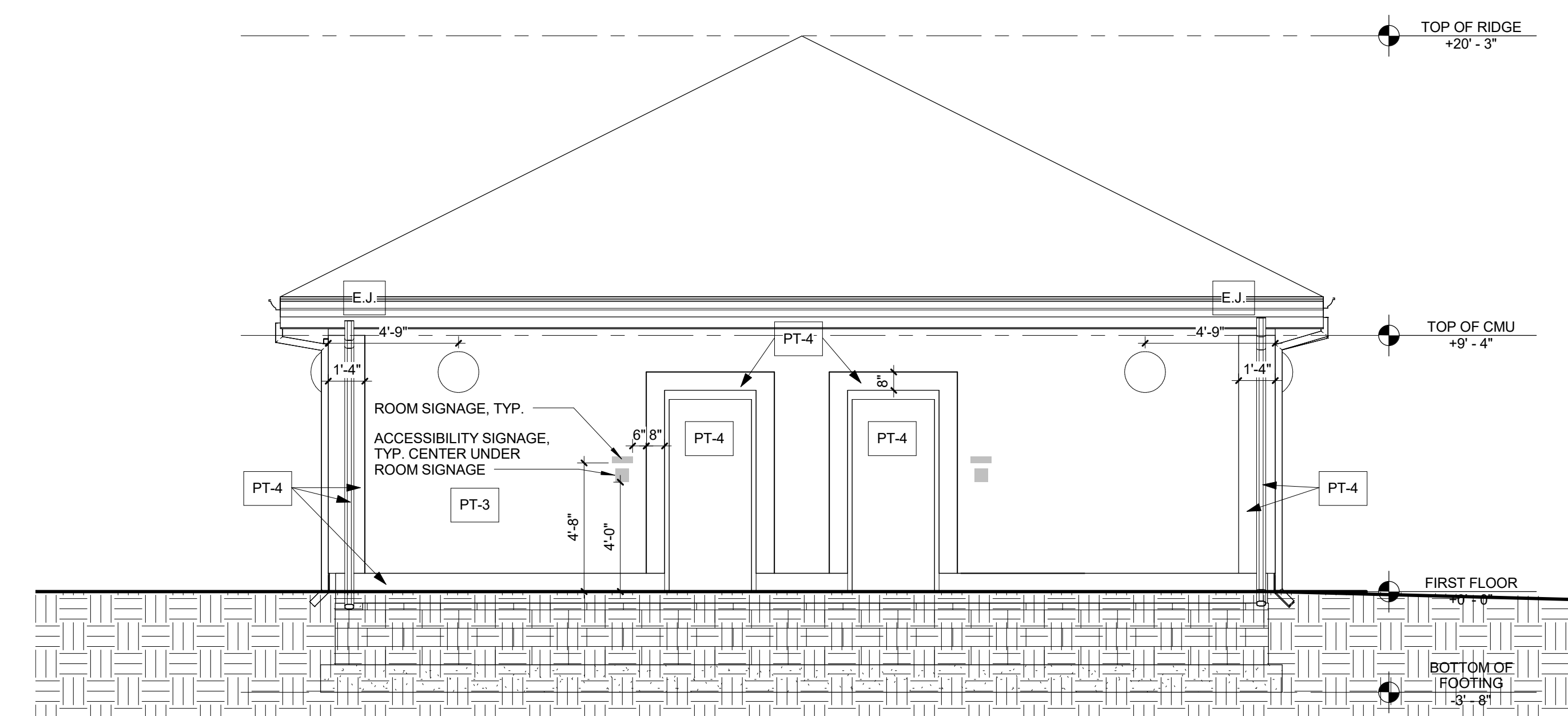
1 EAST ELEVATION - NEW BUILDING
SCALE: 1/4" = 1'-0"



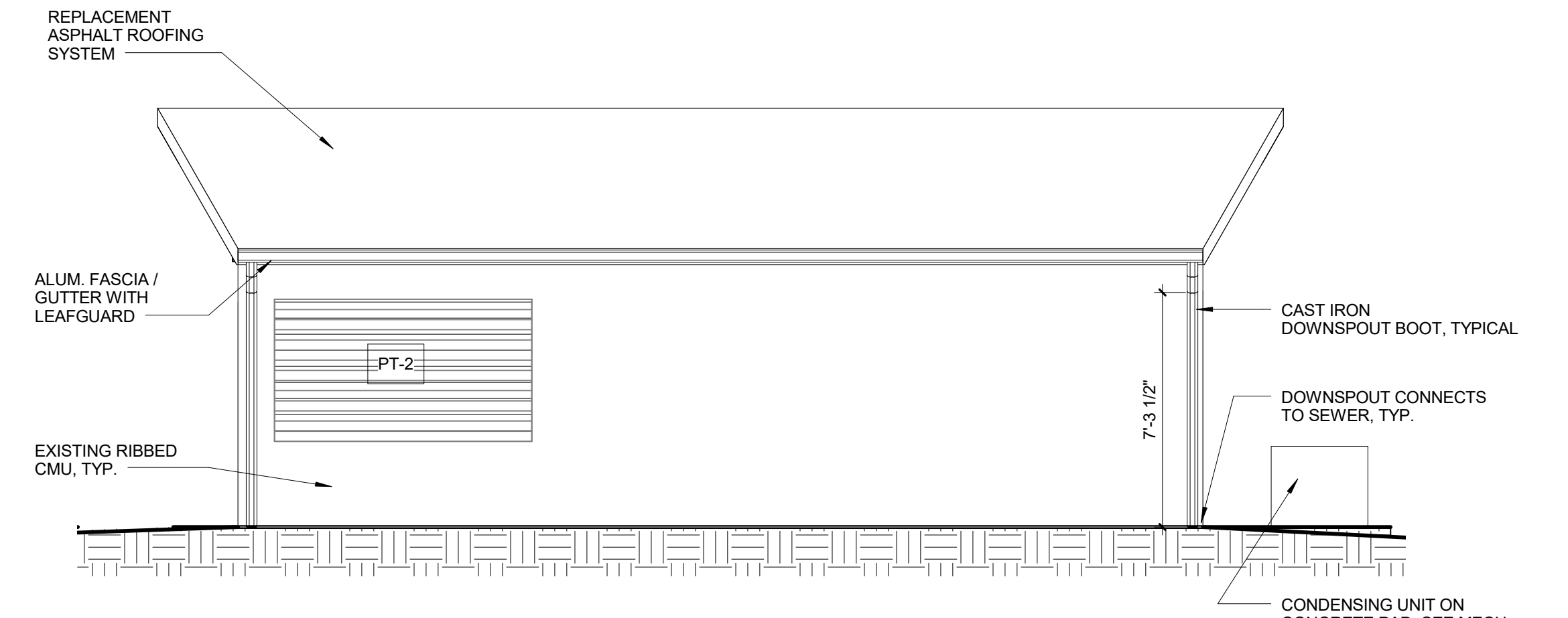
3 WEST ELEVATION - NEW BUILDING
SCALE: 1/4" = 1'-0"



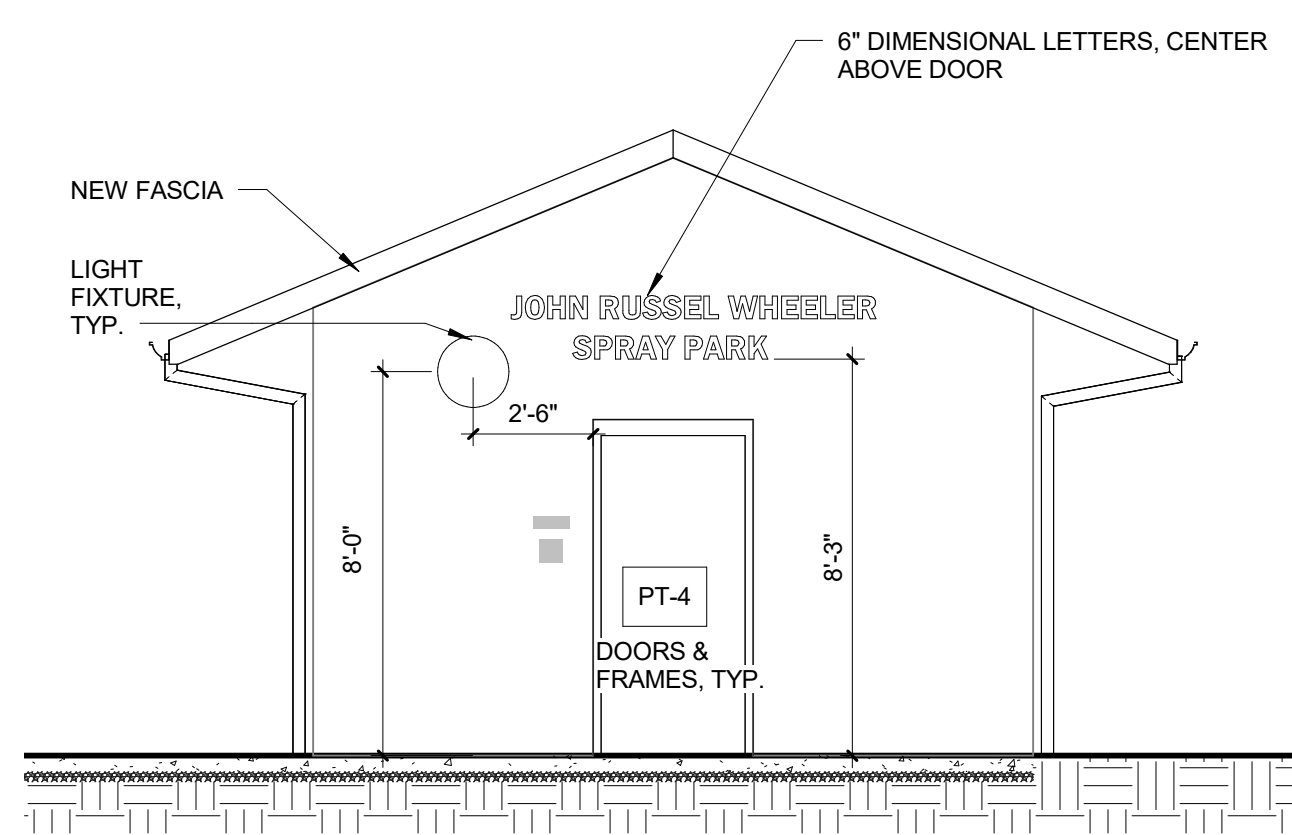
2 NORTH ELEVATION - NEW BUILDING
SCALE: 1/4" = 1'-0"



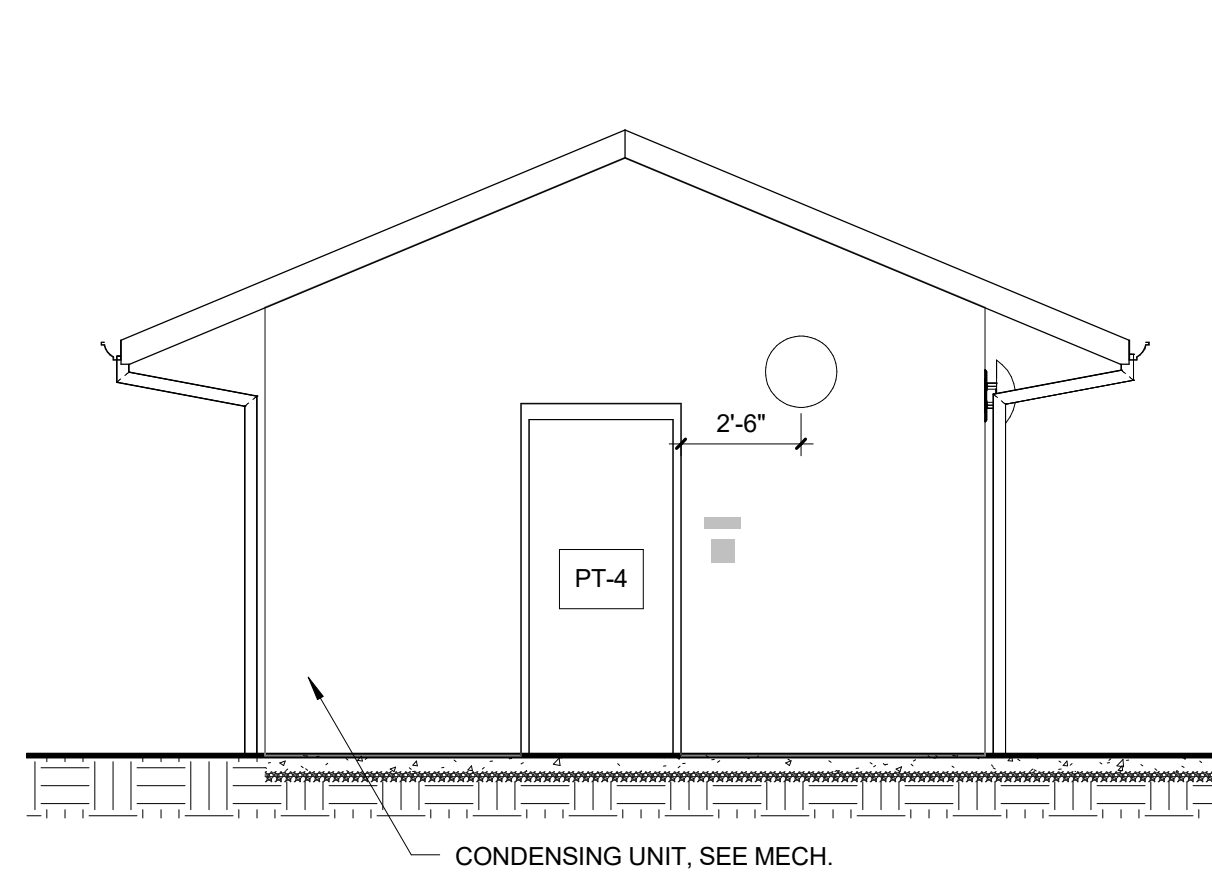
4 SOUTH ELEVATION - NEW BUILDING
SCALE: 1/4" = 1'-0"



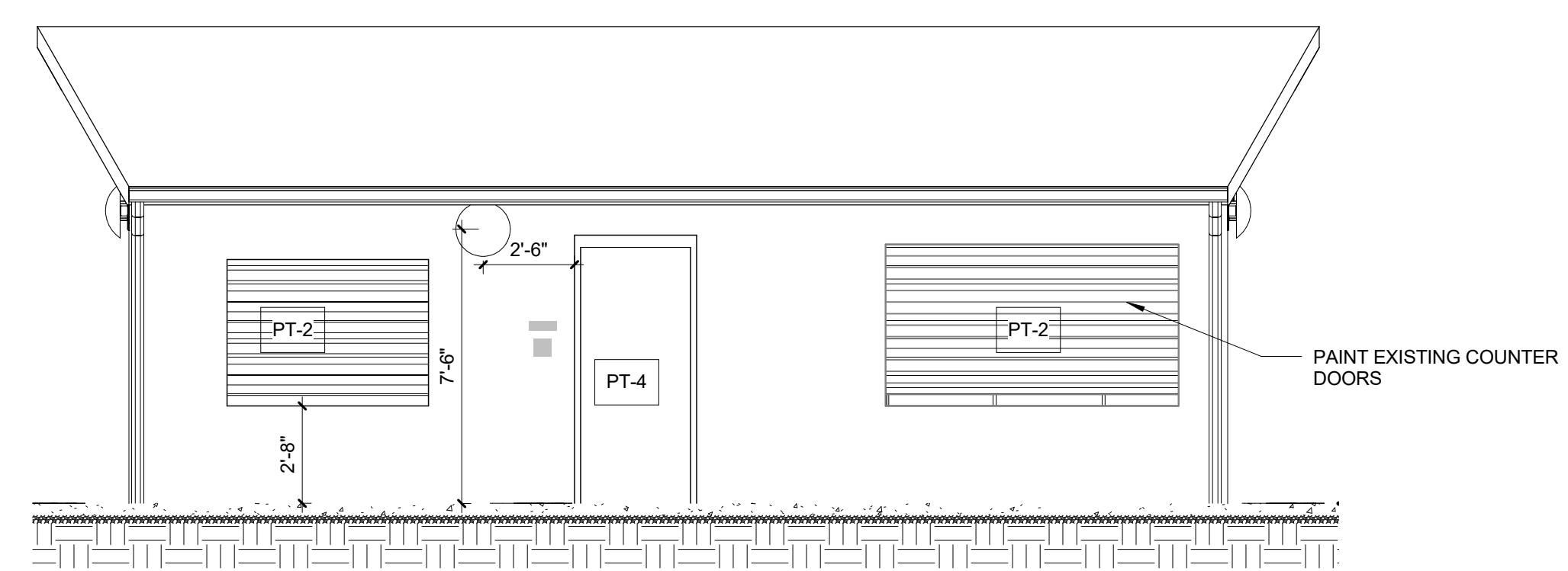
5 SOUTH ELEVATION - EXISTING BUILDING
SCALE: 1/4" = 1'-0"



6 WEST ELEVATION - EXISTING BUILDING
SCALE: 1/4" = 1'-0"



8 EAST ELEVATION - EXISTING BUILDING
SCALE: 1/4" = 1'-0"



7 NORTH ELEVATION - EXISTING BUILDING
SCALE: 1/4" = 1'-0"

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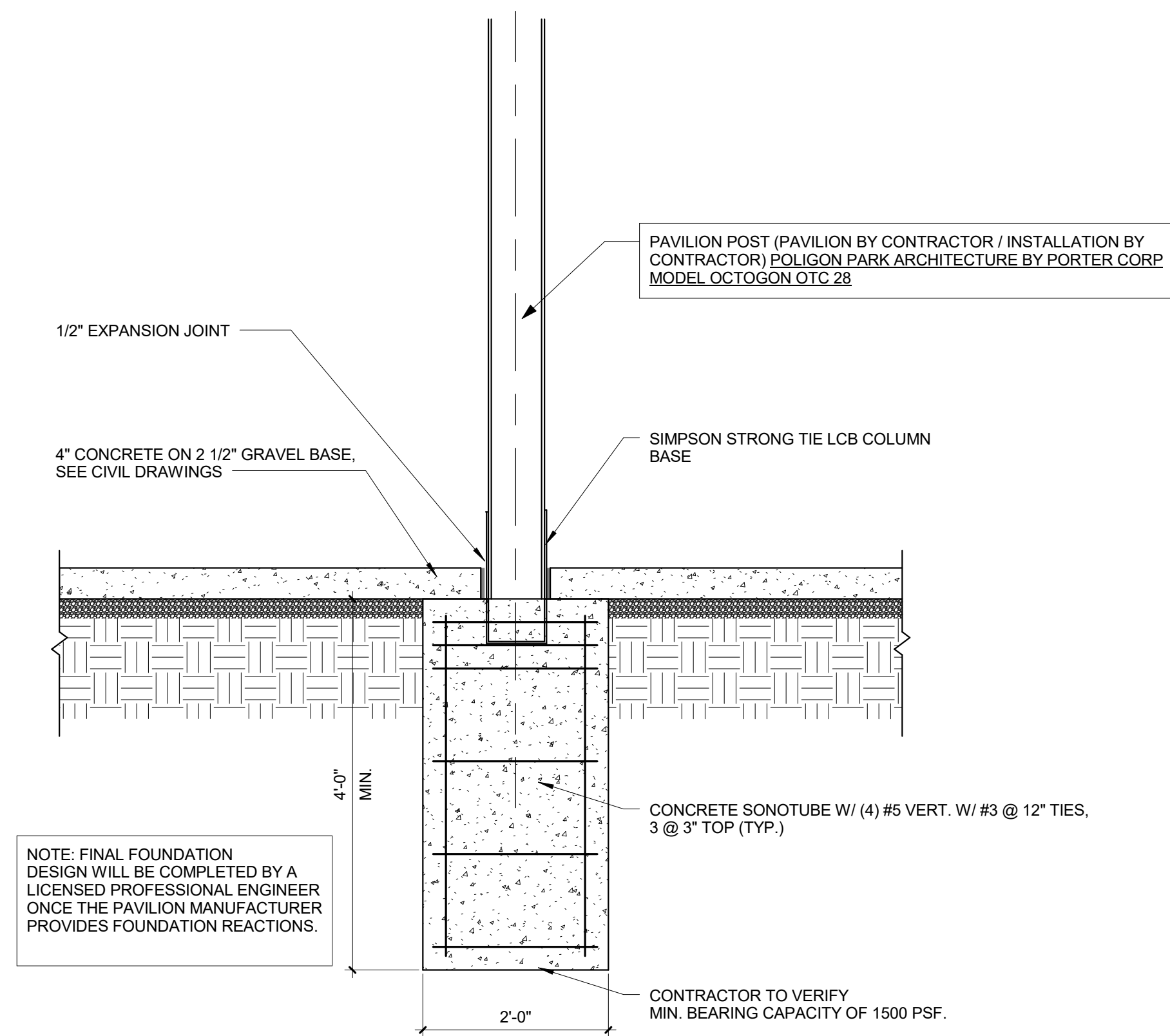
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DEMOLITION AND NEW CONSTRUCTION
AT
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FOR THE
COUNTY OF UNION

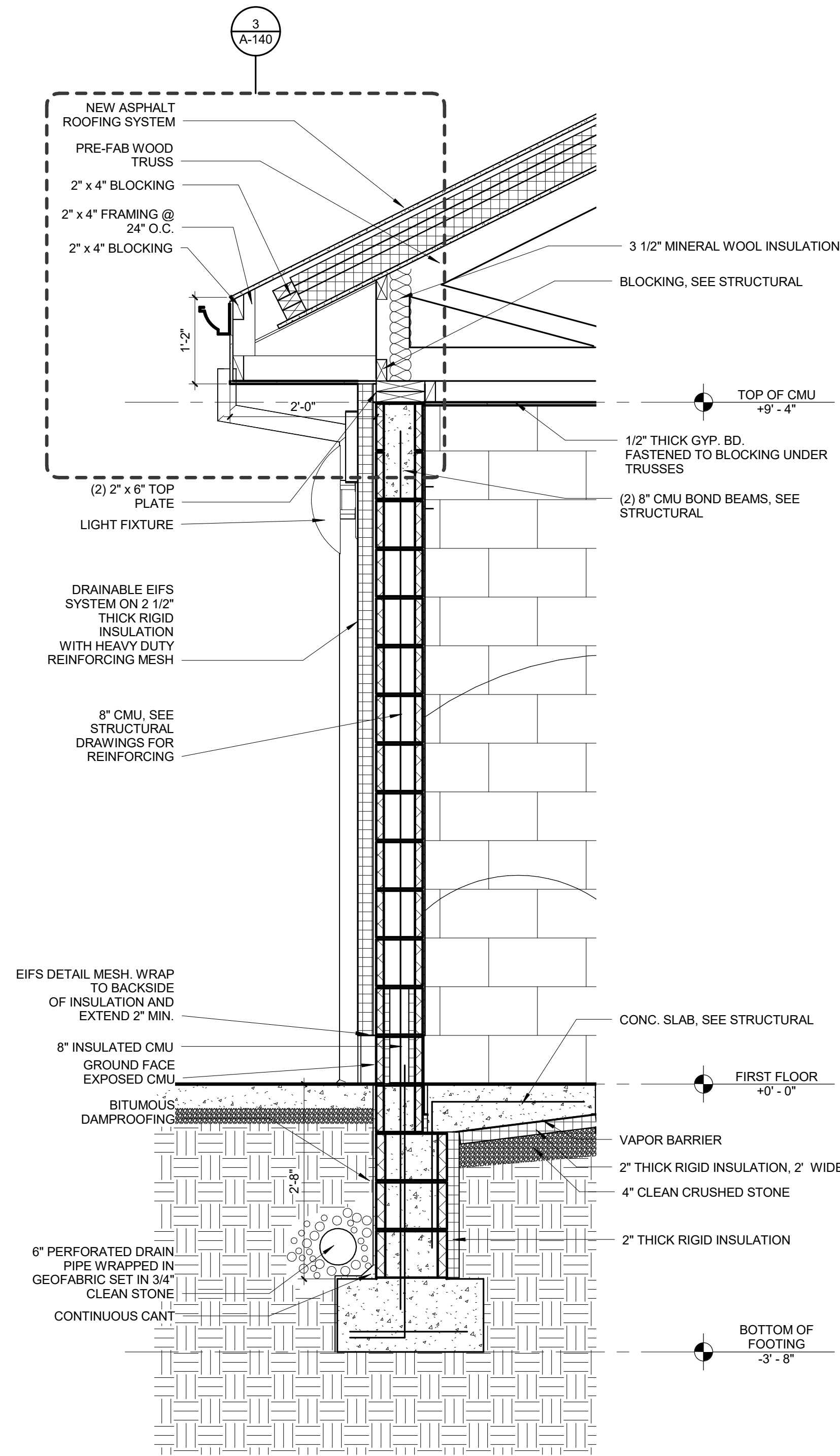
1 09.26.17 BID SET
No. Date Issue or Revision

Drawing Title
ELEVATIONS

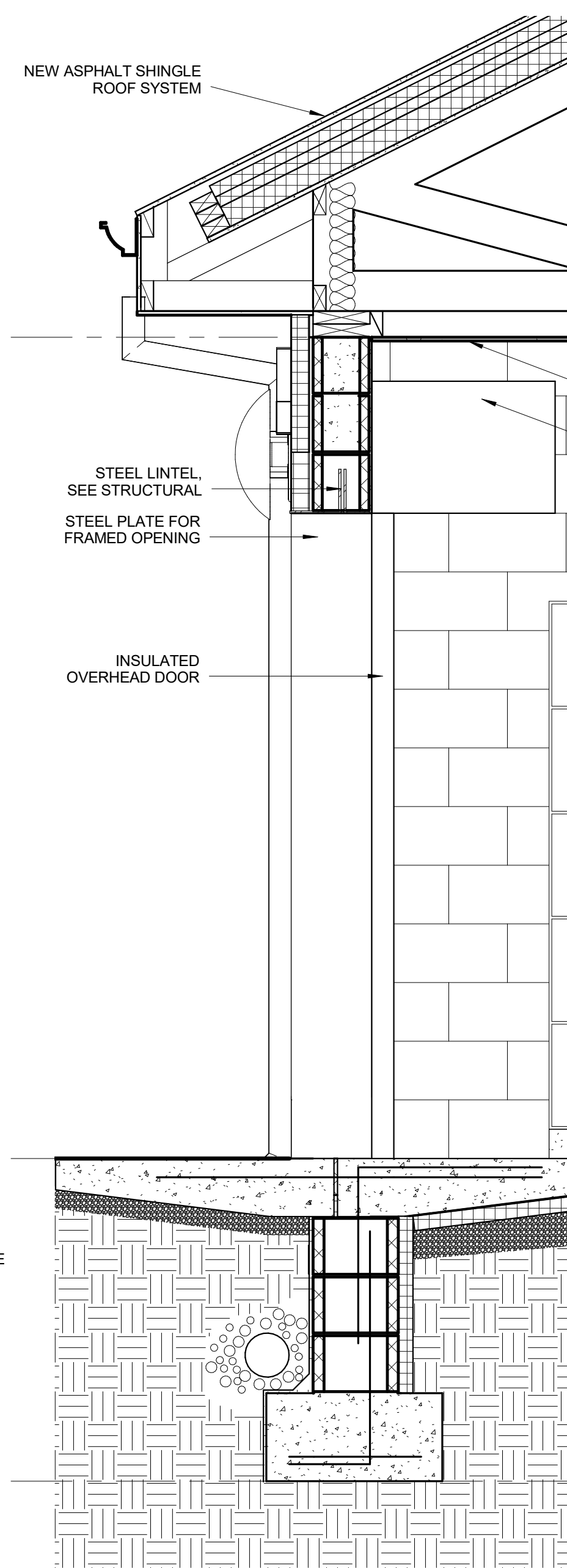
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Drawing Date 09.26.17	Drawing No. A-300
Drawn By KAE	Checked By APA



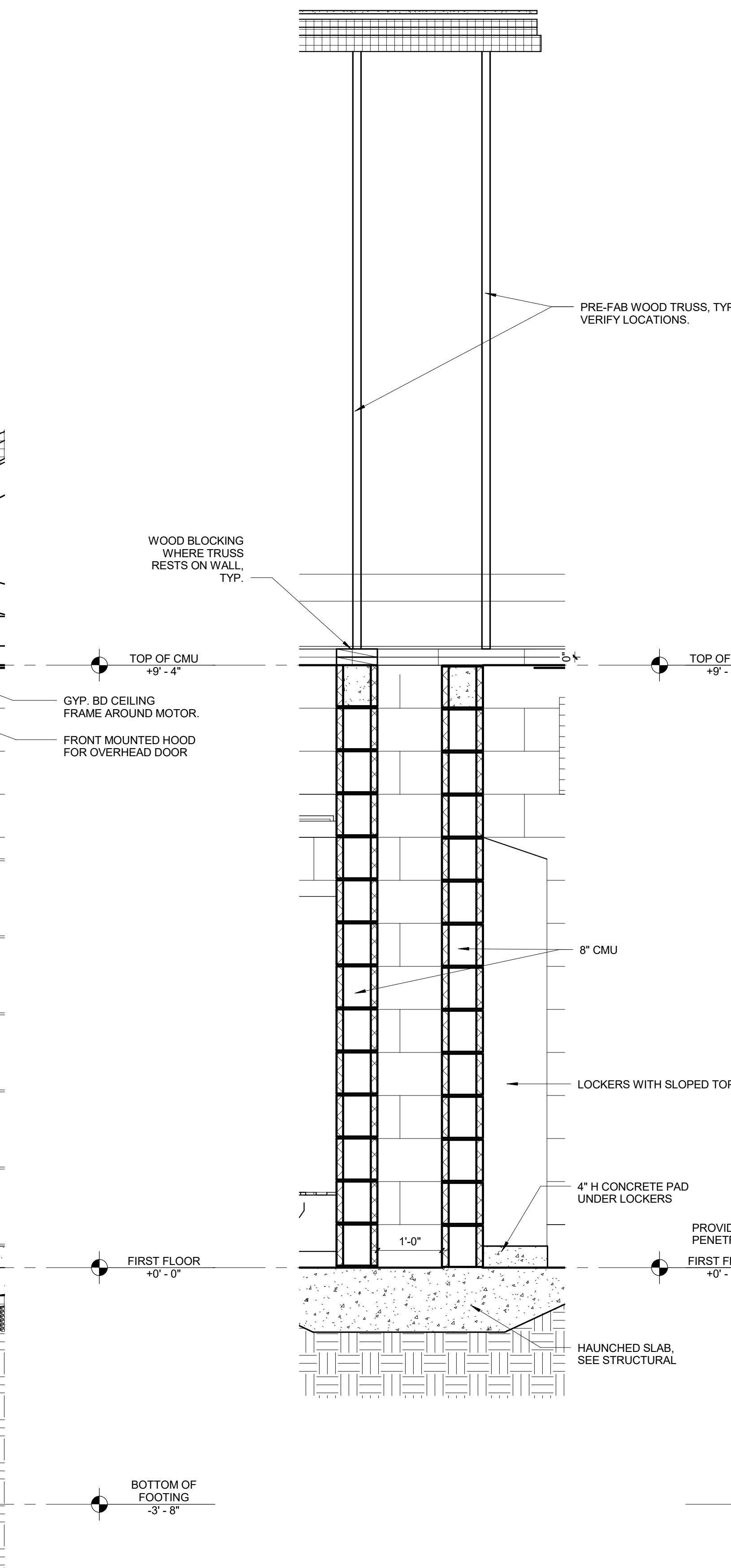
6 TYPICAL PAVILION DETAIL
SCALE: 3/4" = 1'-0"



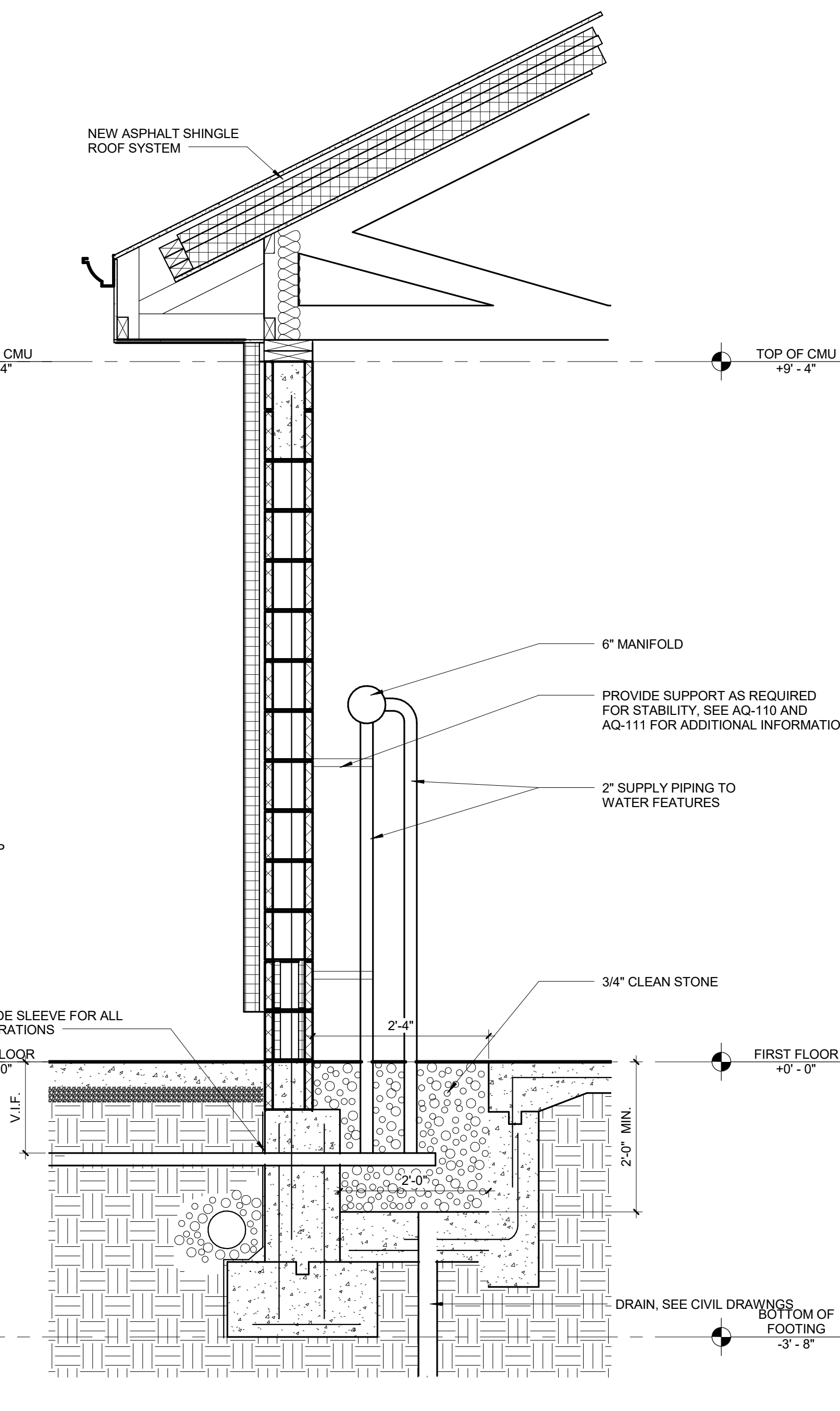
1 WALL SECTION
SCALE: 3/4" = 1'-0"



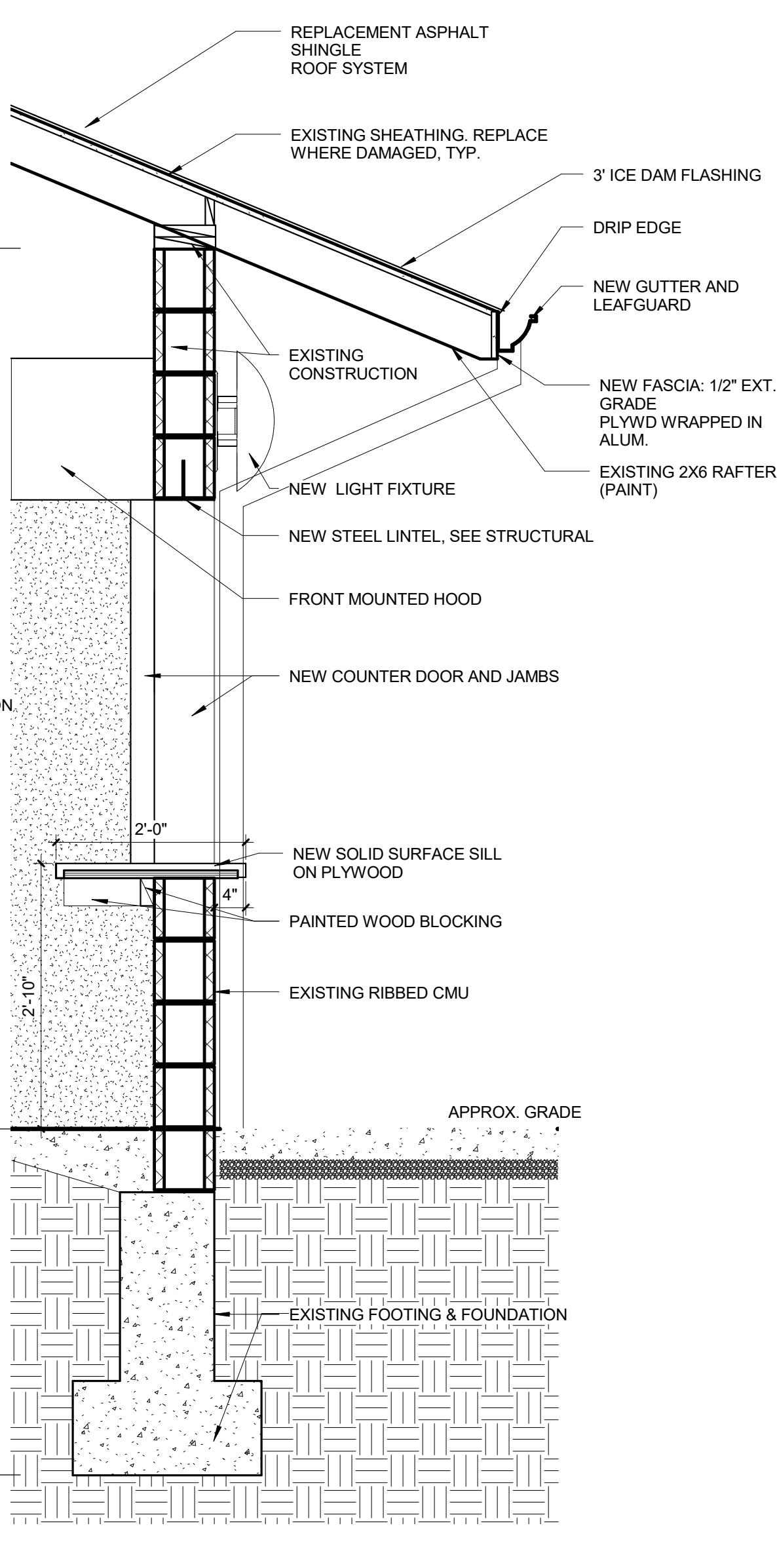
2 WALL SECTION
SCALE: 3/4" = 1'-0"



3 WALL SECTION
SCALE: 3/4" = 1'-0"



4 WALL SECTION
SCALE: 3/4" = 1'-0"



5 WALL SECTION
SCALE: 3/4" = 1'-0"

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Drawing Title

WALL SECTIONS

Scale AS INDICATED USA Project No. 2014-110

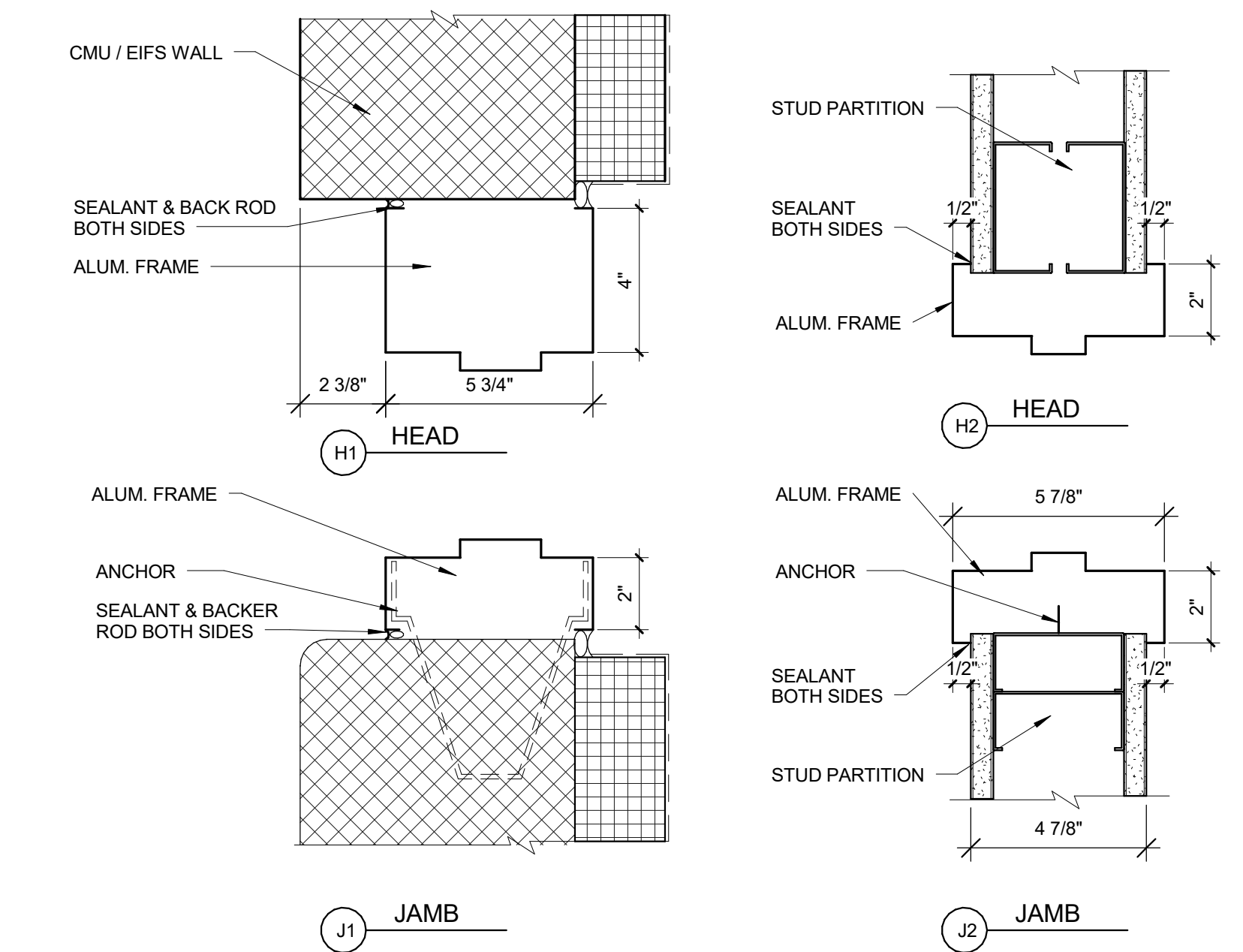
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Drawn By KAE Checked By ApA A-430

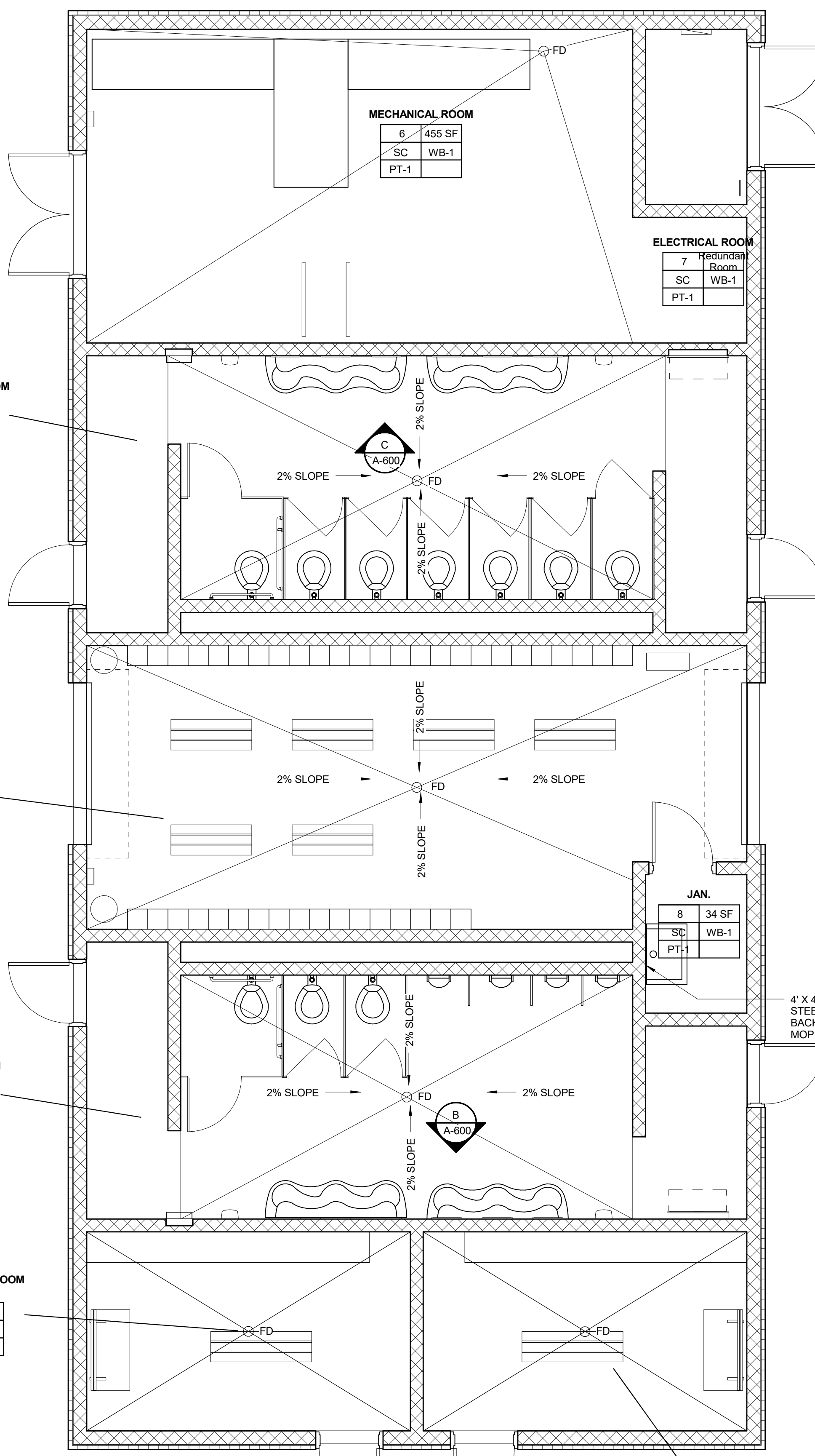
DOOR SCHEDULE							
DOOR ELEVATION	DOOR WIDTH	DOOR HEIGHT	DOOR TYPE	FRAME TYPE	FRAME HEIGHT	HARDWARE SET	COMMENTS
F	3'-0"	7'-0"	FRP	1	7'-4"	1	
F	3'-0"	7'-0"	FRP	1	7'-4"	1	
F	3'-0"	7'-0"	FRP	1	7'-4"	1	
F	3'-0"	7'-0"	FRP	1	7'-4"	1	
G	8'-0"	7'-4"				6	OVERHEAD DOOR
G	8'-0"	7'-4"				6	OVERHEAD DOOR
F	3'-0"	7'-0"	FRP	1	7'-4"	1	
F	3'-0"	7'-0"	FRP	1	7'-4"	1	
FF	6'-0"	7'-0"	FRP	1	7'-4"	2	
FF	6'-0"	7'-0"	FRP	1	7'-4"	2	
F	3'-0"	7'-0"	FRP	1	7'-4"	3	
F	3'-0"	7'-0"	FRP	1	7'-4"	5	
F	3'-0"	7'-0"	FRP	1	7'-4"	5	
H	5'-6"	4'-0"	FRP	2	7'-2"	4	FRAME IN GYP. BOARD PARTITION
I	3'-0"	6'-8"	FRP	1	7'-0"	5	EXISTING FRAME TO REMAIN

ROOM FINISH SCHEDULE							
NUMBER	NAME	FLOOR	FINISH			COMMENTS	
			BASE	WALL	CEILING		
1	TEAM CHANGING ROOM #1	R-1	R-1	PT-1		GYP. BD.	
2	TEAM CHANGING ROOM #2	R-1	R-1	PT-1		GYP. BD.	
3	MEN'S TOILET ROOM	R-1	R-1	PT-1	PT-2/3	GYP. BD. SEE ACCENT WALL ELEVATION E	
4	DAY LOCKER AREA	R-1	R-1	PT-1		GYP. BD.	
5	WOMEN'S TOILET ROOM	R-1	R-1	PT-1	PT-2/3	GYP. BD. SEE ACCENT WALL ELEVATION C	
6	MECHANICAL ROOM	SC	WB-1	PT-1		EXP	
7	ELECTRICAL ROOM	SC	WB-1	PT-1		EXP	
8	JAN.	SC	WB-1	PT-1		EXP	
12	TICKET/BADGE OFFICE	R-1	R-1	PT-3		EXP/PT-1 --	
13	FIRST AID OFFICE	R-1	R-1	PT-3		EXP/PT-1 --	
14	LIFEGUARD OFFICE	R-1	R-1	PT-1		EXP/PT-1 --	

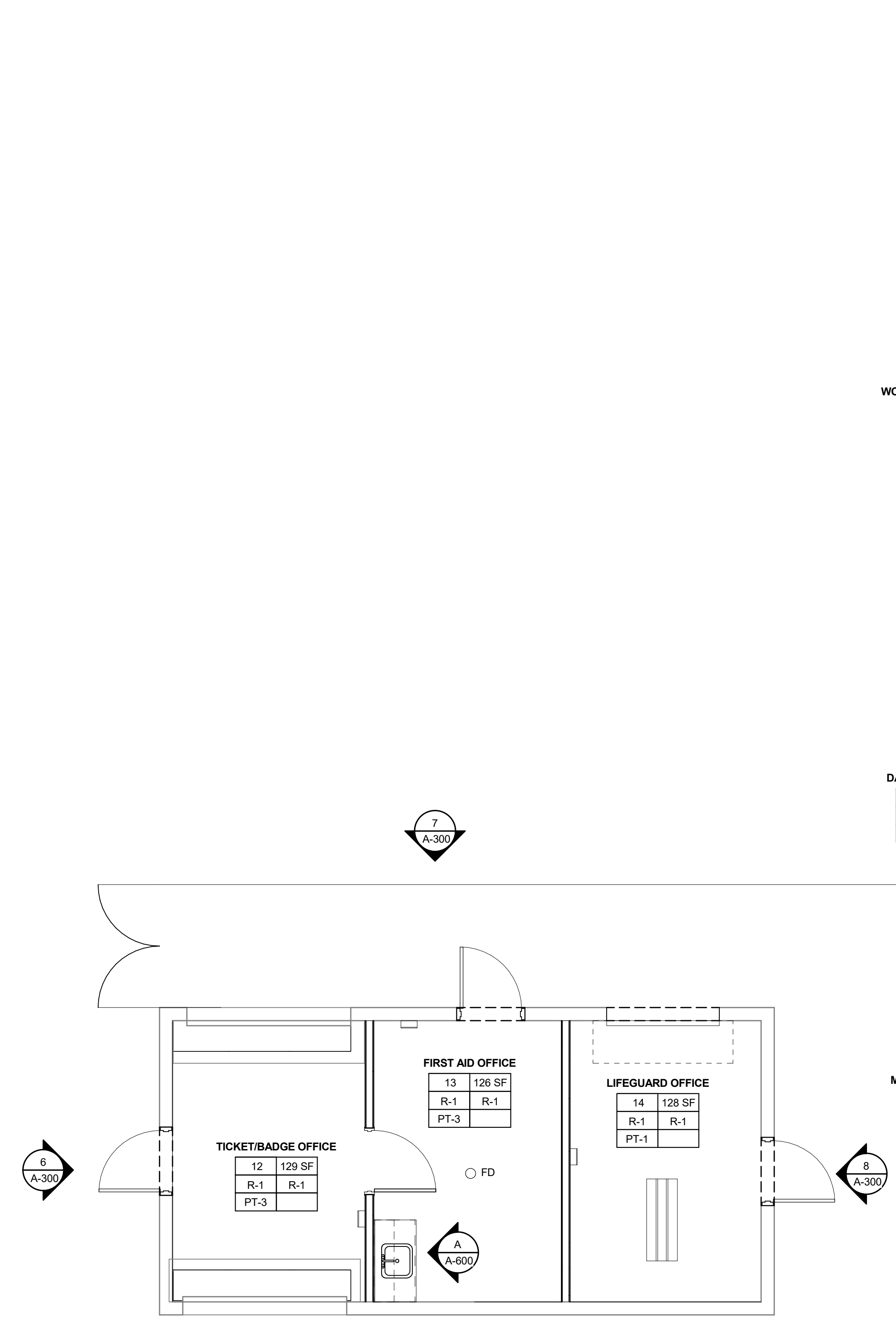
FINISH MATERIAL LEGEND						
TAG	FINISH	MANUFACTURER	STYLE	COLOR	SIZE	COMMENTS
FLOOR FINISHES						
R-1	RESINOUS	ACRYLICON	ACRYLICON FLAKE	BROWN	N/A	
SC	SEALED CONCRETE				N/A	
DOOR FRAME FINISH						
PT-4	PAINT	BENJAMIN MOORE	BM # 2107-20 MOCHA BROWN	BROWN		
WALL FINISHES						
PT-1	PAINT	BENJAMIN MOORE	BM # 1613 SILENT NIGHT	GRAY		
PT-2	PAINT	BENJAMIN MOORE	BM # 804	DARK BLUE		
PT-3	PAINT	BENJAMIN MOORE	BM # 809	LIGHT BLUE		
BASE FINISHES						
R-1	RESINOUS	ACRYLICON	ACRYLICON FLAKE	BROWN	8" / 4"	PROVIDE INTEGRAL 8" HIGH BASE TYPICAL, 4" HIGH AT LOCKERS
WB-1	WALL BASE	ROPPE	177	STEEL BLUE	4"	



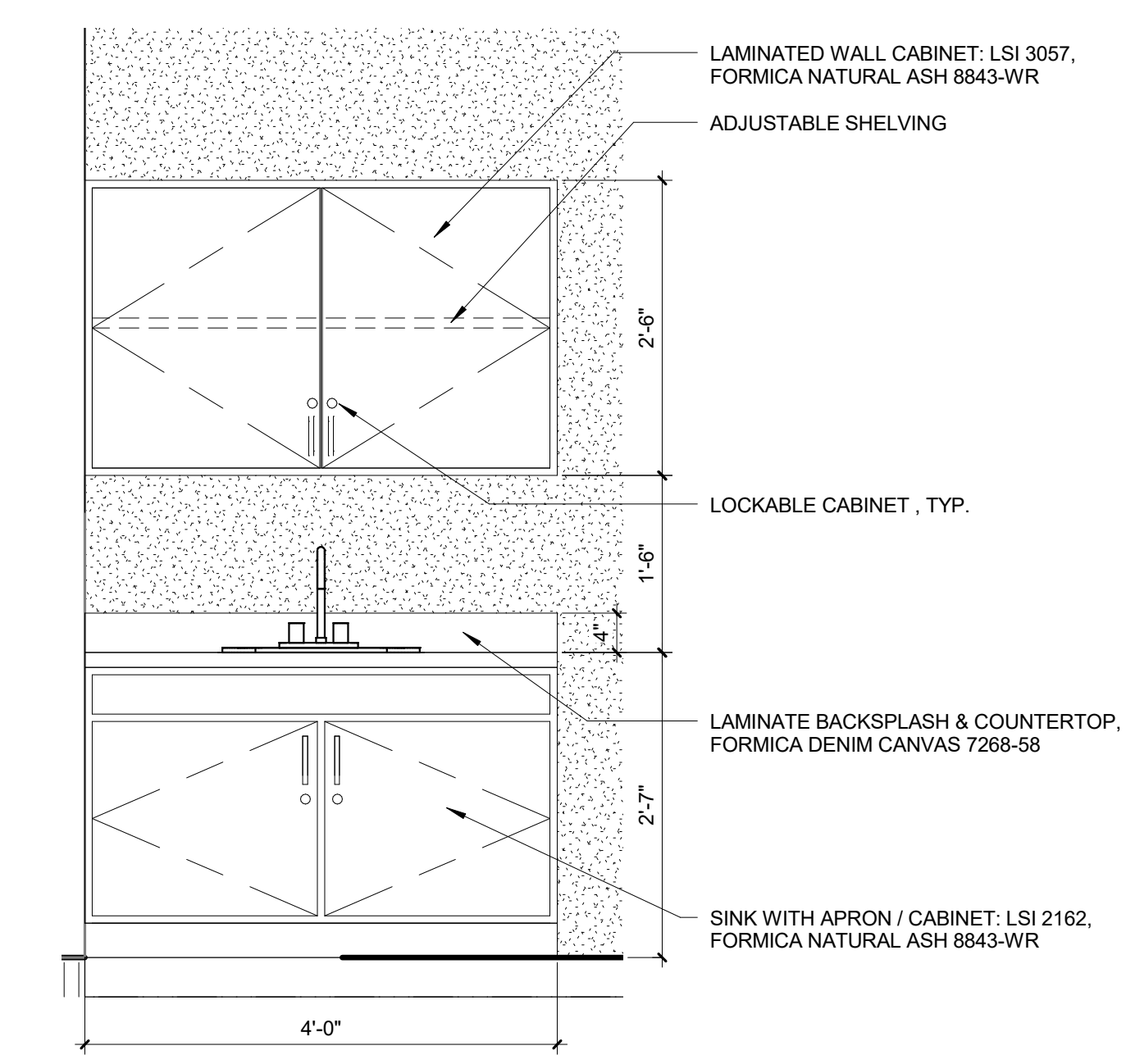
3 DOOR JAMB DETAILS
SCALE: 3" = 1'-0"



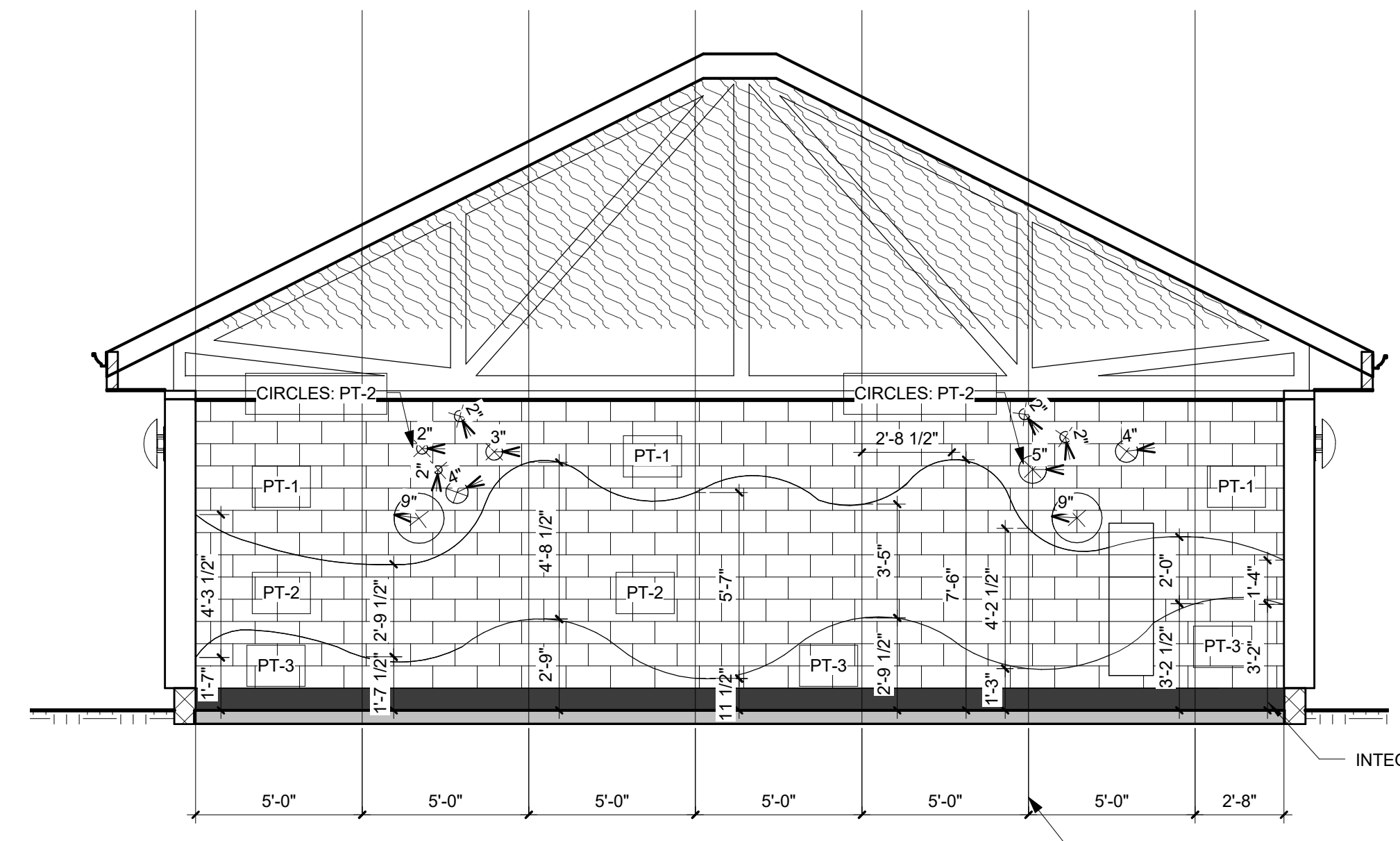
2 FINISH FLOOR PLAN - NEW BUILDING
SCALE: 1/4" = 1'-0"



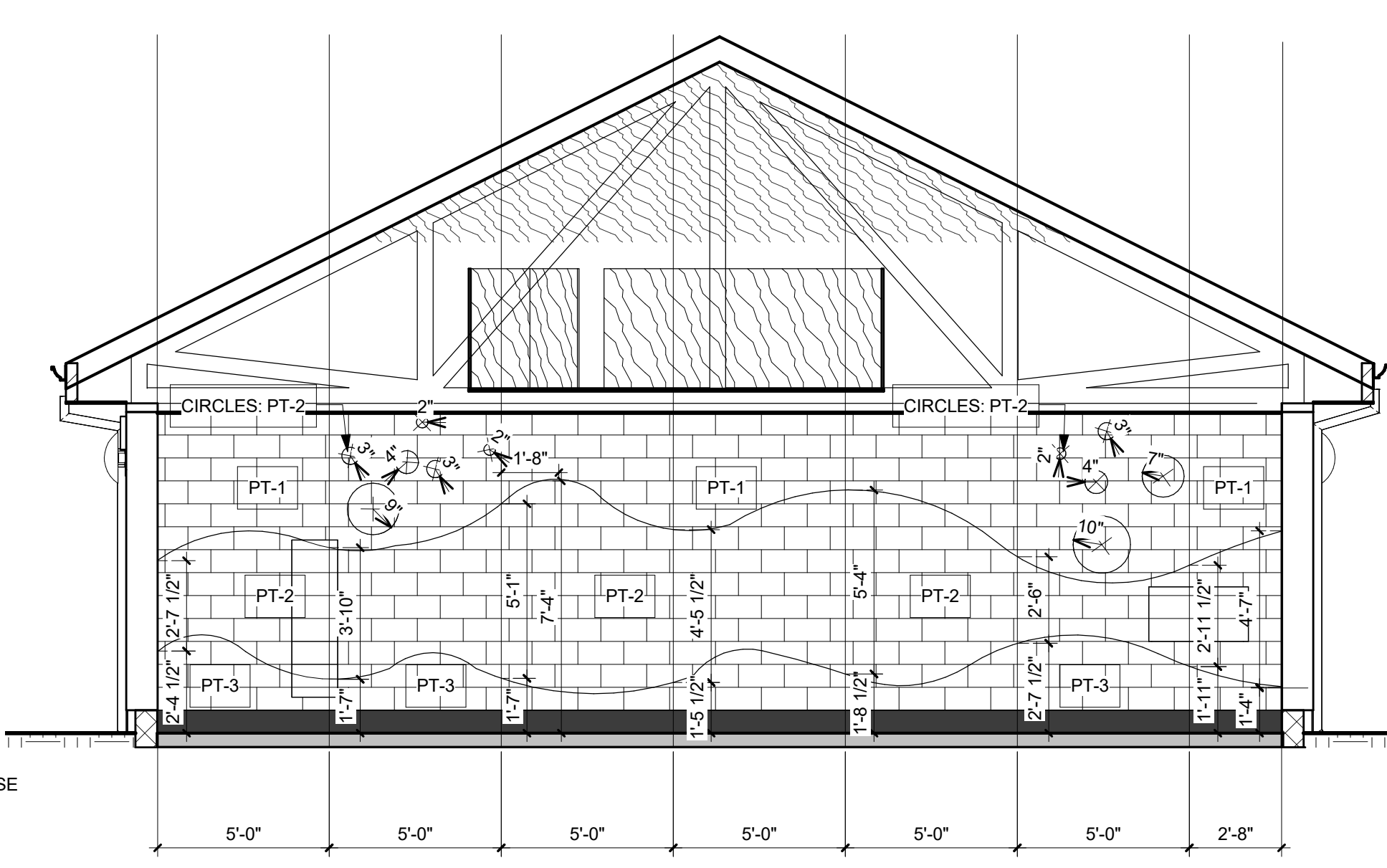
1 FINISH FLOOR PLAN - EXISTING BUILDING
SCALE: 1/4" = 1'-0"



A CASEWORK ELEVATION
SCALE: 3/4" = 1'-0"



B MEN'S ACCENT WALL
SCALE: 1/4" = 1'-0"



C WOMEN'S ROOM ACCENT WALL
SCALE: 1/4" = 1'-0"

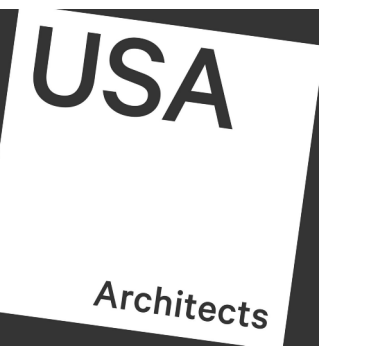
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DEMOLITION AND NEW CONSTRUCTION
AT
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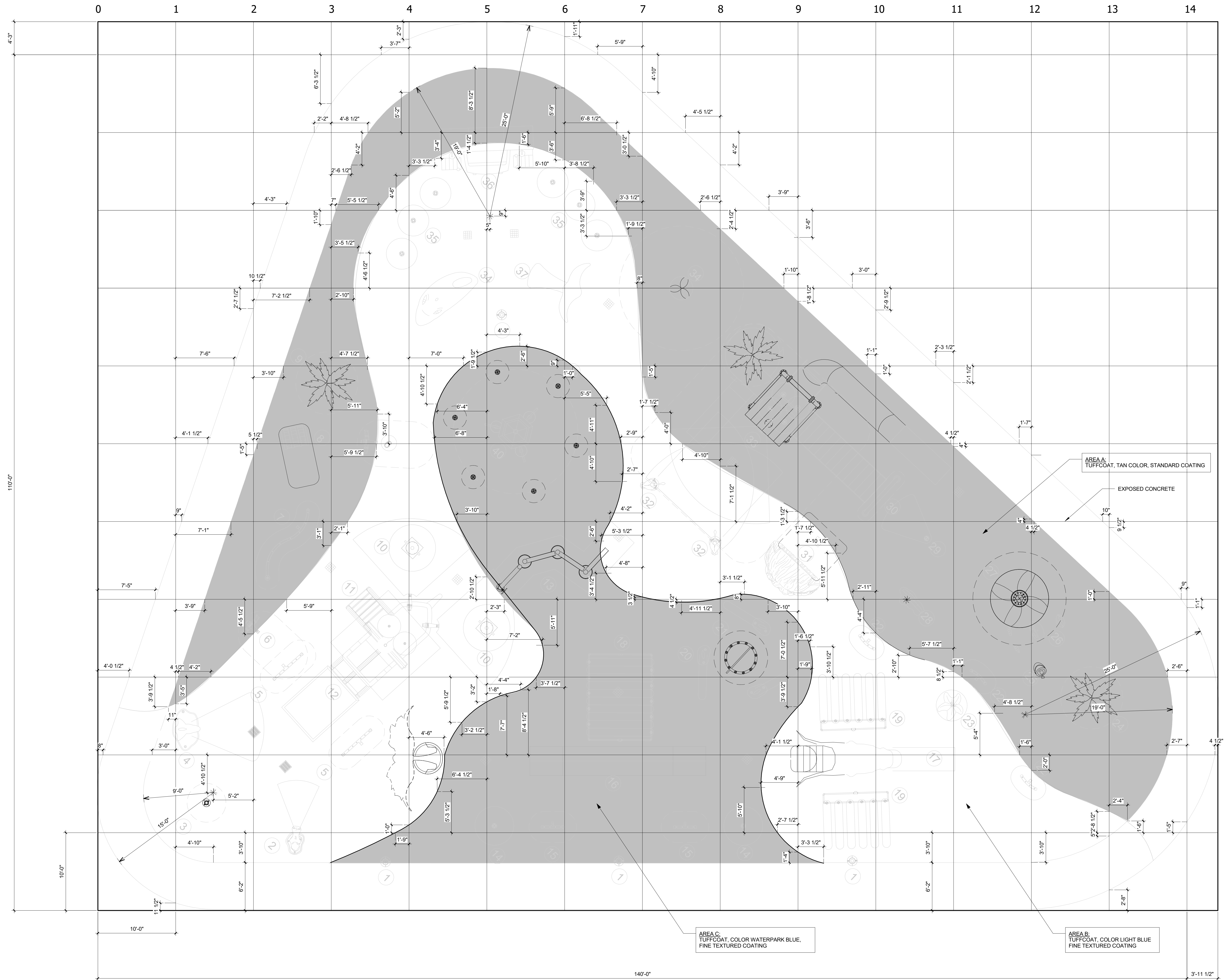
1 09.26.17 BID SET	
No.	Date
Issue or Revision	
Drawing Title	
DOOR & FINISH SCHEDULES + DETAILS	
Scale	USA Project No.
AS INDICATED	2014-110
Drawing Date	Drawing No.
09.26.17	A-600
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Peter C. Campiano, AIA Susan M. DeHart, AIA



1 ENLARGED CONCRETE PLAN
SCALE: 3/16" = 1'-0"

NOTE: GRID IS CONTROL JOINT LOCATIONS AND TO AID IN LAYING OUT DESIGN



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Drawing Title
ENLARGED CONCRETE PLAN

Scale	USA Project No.
AS INDICATED	2014-110
Drawing Date	Drawing No.
09.26.17	A-601
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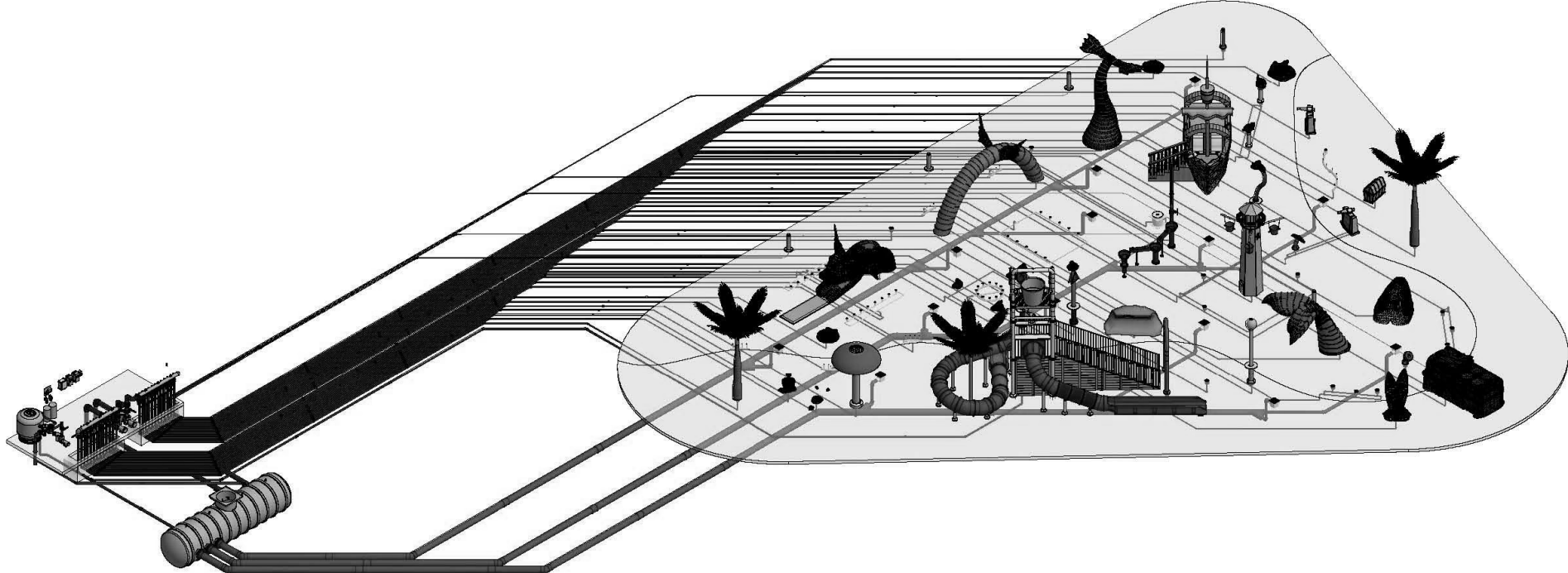
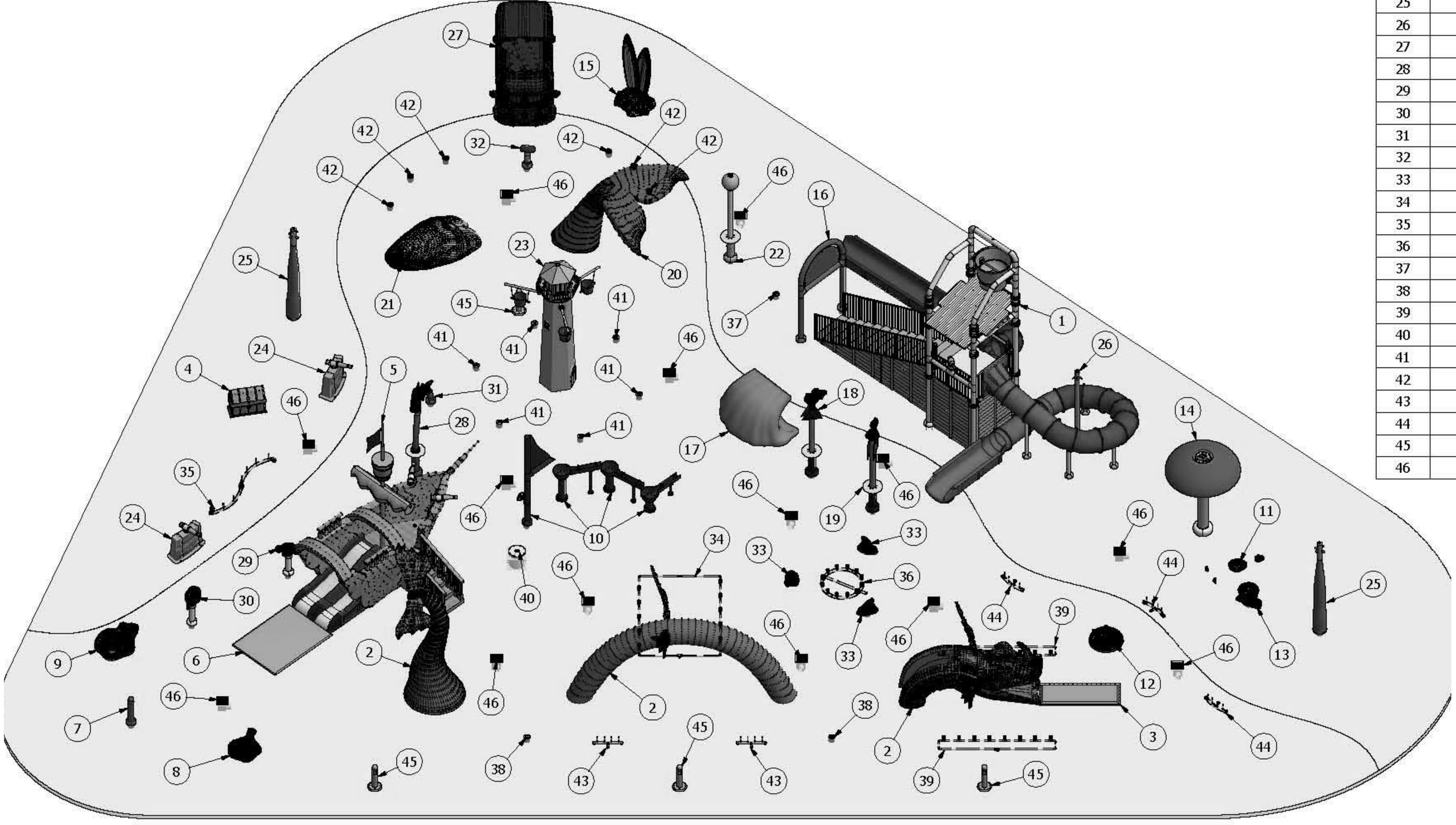
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Daniel J. Fortunato, AIA
Mitch Miller, AIA, FCSI, CCS
Susan H. DeLark, AIA

NOTE: CONTRACTOR TO PROVIDE:

- NOTES -
- DESIGNS ARE PREPARED FOR REVIEW ONLY AND NOT INTENDED AS A CONSTRUCTION DOCUMENT.
 - CONCRETE PAD LAYOUT AND SIZE ARE FOR REFERENCE ONLY AND MAY BE ALTERED TO BEST ACCOMMODATE EXISTING FIELD CONDITIONS.
 - CONSTRUCTION SHALL CONFORM TO THE LATEST STATE DEPARTMENT OF HEALTH STANDARDS AND SPECIFICATIONS, AND LOCAL SUPPLEMENTAL CODES AND SPECIFICATIONS.
 - CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL CONSTRUCTION MATERIAL AND LABOR TO PROPERLY CONNECT AND INSTALL EQUIPMENT AND WATER FEATURES.
 - AN APPROVED SET OF PLANS SHALL BE AVAILABLE ON THE JOBSITE AT ALL TIMES.

NOTE: SPRAY PARK WATER FEATURES (PARTS LIST) TO BE PURCHASED BY OWNER AND INSTALLED BY CONTRACTOR.

PARTS LIST					PARTS LIST				
ITEM	QTY	PART NUMBER	DESCRIPTION	GPM	ITEM	QTY	PART NUMBER	DESCRIPTION	GPM
1	1	MONSOON1-201	MONSOON1-201	194.5	13	1	TSBC-001-OM	THEME SPRAY, BEACH BUCKET, OMNI	11.4
2	1	DGSL-001	DRAGON SLIDE	135	14	1	RNDP-001-MF-OM	RAIN DROP, MYSTICAL FUN, OMNI	3.1
3	1	PAD-3X8	3 x 8 SLIDE EXIT PAD	N/A	15	1	SRFB-001-OM	SURF'S UP BOARDS, OMNI	40.7
4	1	TRCH-001-OM	TREASURE CHEST, OMNI	15.2	16	1	ARJT-007-OM	ARCH JET WITH SIGN, OMNI	45.4
5	1	MNSH-001-OM	MINI PIRATE SHIP, OMNI	98.5	17	1	WAVE-001-OM	BIG KAHUNA WAVE, OMNI	36.5
6	1	PAD-6X8	6 x 8 SLIDE EXIT PAD	N/A	18	1	PLCN-001-OM	PELICAN CANNON W/ TRIANGLE MARKER, OMNI	5.1
7	1	BLSJ-005-OM	BELLE SPRAY JET, OMNI	30	19	1	PLCN-002-OM	PELICAN CANNON W/ SQUARE MARKER, OMNI	5.1
8	1	CFSC-001-OM	CF CROCODILE STEVE, OMNI	15	20	1	WHTL-004-OM	WHALE TAIL LIFE SIZE SHORT, OMNI	10
9	1	CFSK-001-OM	CF AQUA SHARK, OMNI	16.8	21	1	WHHD-004-OM	WHALE HEAD LOWER PROFILE MEDIUM SIZE, OMNI	15.3
10	1	PFPC-012-OM	POOLS N' FALLS PLAYCENTER 6V W/ SAIL, OMNI	66.1	22	1	BCHSPN-001-OM	BEACH BALL SPINNER, OMNI	24.4
11	1	CFSU-001-OM	CF SUNBATHER, OMNI	6.7	23	1	LKBN-006-OM	LEAKIN BEACON 3 ARM BUCKET OMNI	69.6
12	1	CFST-003-OM	CF SEBASTIAN STAR, OMNI	11.4	24	2	WFCN-014-OM	CITY WALL CANNON W /BUTTON, OMNI	2.5
					25	2	PLMT-005-OM	PALM TREE SWANKY, OMNI	7.9
					26	1	PLMT-006	PALM TREE, NO FLOW	N/A
					27	1	SBUS-002-OM	SURFER BUS DELUXE XL, OMNI	90
					28	1	SSCN-001-OM	SERPENT CANNON, OMNI	11.4
					29	1	WFCN-017-OM	WATER FUN CANNON TURTLE, OMNI	2.5
					30	1	WFCN-023-OM	WATER FUN CANNON FISH, OMNI	2.5
					31	1	SPSF-001-OM	SPINNING STARFISH, OMNI	3.8
					32	1	SPCR-001-OM	SPINNING CRAB, OMNI	3.8
					33	3	CFFN-001-OM	CF SHARK FIN, OMNI	11.4
					34	1	SHWT-004	SHOWER TUNNEL	37.9
					35	1	SPBG-003	SPRAY BRIGADE POPKORN JET	41.7
					36	1	CIRT-012	CIRCLE TIME, 12 OUTLET	20.2
					37	1	SFJT-003-OM	SLANT FINGER JET, OMNI	8
					38	2	TALP-001-OM	TALL TOOLIP SPRAY, OMNI	10.6
					39	2	TNAR-010	TUNNEL ARCH, 8 OUTLET	23
					40	1	FMGS-003	FOAM GEYSER	30
					41	6	UPJT-007-OM	UPSTREAM JET, OMNI	6.7
					42	6	GSJT-001-OM	GUSHER JET, OMNI	15.2
					43	2	PPJT-003	POP JET, 4 OUTLET	27
					44	3	PPJT-004	POP JET, CURVED, 4 OUTLET	27
					45	4	BOL-004	6" BOLLARD, POLYURETHANE PHOTO SENSOR	N/A
					46	14	DRN12-002	DRAIN-12X12X12 FIBERGLASS-6"	135



1 SPRAY PARK EQUIPMENT LAYOUT
SCALE: N.T.S.

2 SPRAY PARK OVERALL PLAN
SCALE: N.T.S.

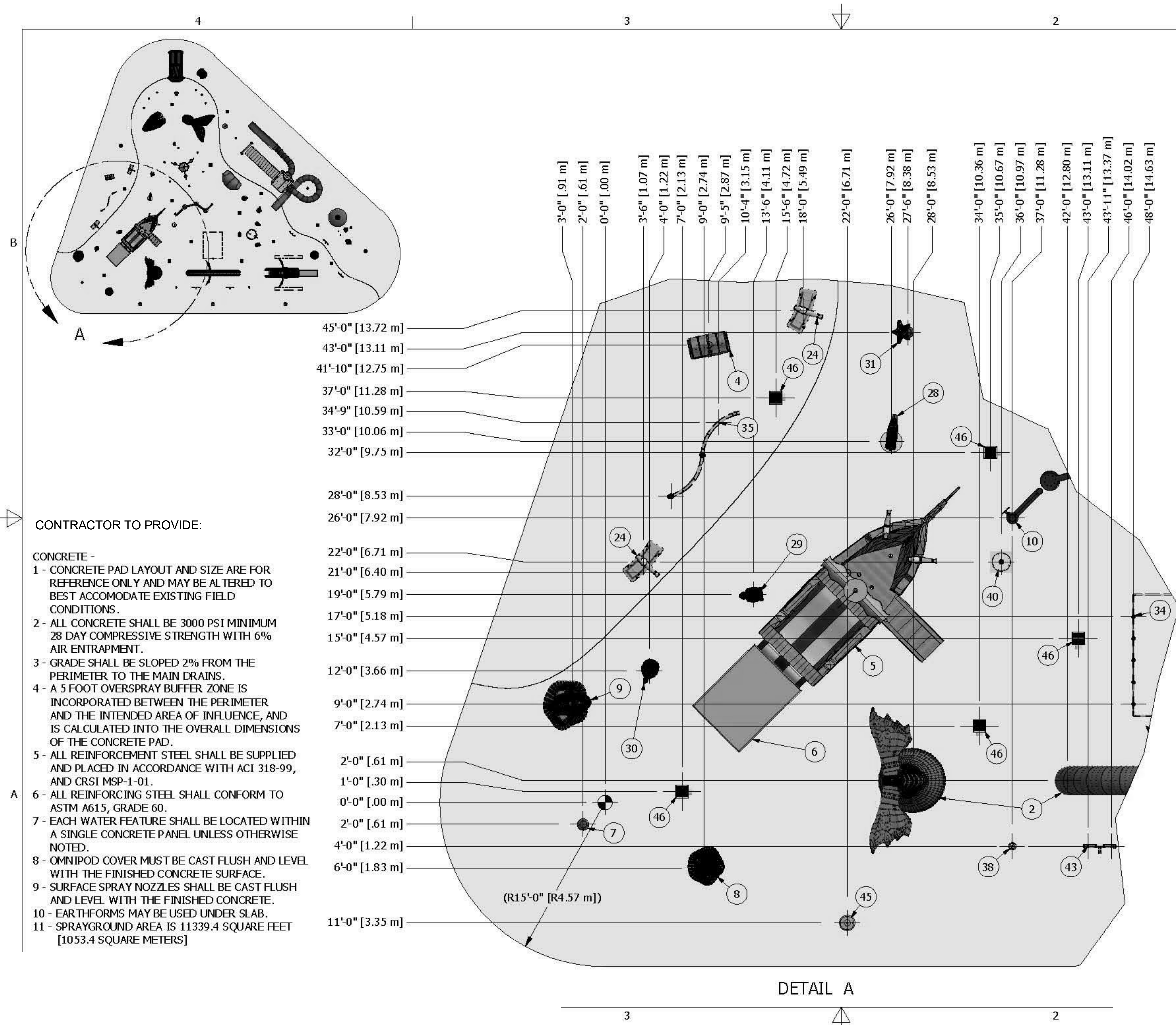
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DEMOLITION AND NEW CONSTRUCTION
AT
WHEELER PARK
FOR THE
COUNTY OF UNION

Drawing Title SPRAY PARK EQUIPMENT LAYOUT & OVERALL PLAN	
Scale AS INDICATED	USA Project No. 2014-110
Drawing Date 09.26.17	Drawing No. AQ-101
Drawn By KAE	Checked By APA

NOTE: SPRAY PARK WATER FEATURES (PARTS LIST) TO BE PURCHASED BY OWNER AND INSTALLED BY CONTRACTOR.

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
2	1	DGSL-001	DRAGON SLIDE
4	1	TRCH-001-OM	TREASURE CHEST, OMNI
7	1	BLSJ-005-OM	BELLE SPRAY JET, OMNI
8	1	CFSC-001-OM	CF CROCODILE STEVE, OMNI
9	1	CFSK-001-OM	CF AQUA SHARK, OMNI
10	1	PFPC-012-OM	POOLS N' FALLS PLAYCENTER 6V W/ SAIL, OMNI
24	2	WFCN-014-OM	CITY WALL CANNON W /BUTTON, OMNI
28	1	SSCN-001-OM	SERPENT CANNON, OMNI
29	1	WFCN-017-OM	WATER FUN CANNON TURTLE, OMNI
30	1	WFCN-023-OM	WATER FUN CANNON FISH, OMNI
31	1	SPSF-001-OM	SPINNING STARFISH, OMNI
34	1	SHWT-004	SHOWER TUNNEL
35	1	SPBG-003	SPRAY BRIGADE POPKORN JET
38	2	TALP-001-OM	TALL TOOLIP SPRAY, OMNI
40	1	FMGS-003	FOAM GEYSER
43	2	PPJT-003	POP JET, 4 OUTLET
45	4	BOL-004	6" BOLLARD, POLYURETHANE PHOTO SENSOR
46	14	DRN12-002	DRAIN-12X1 2X1 2 FIBERGLASS-6"



DETAIL A

CONTRACTOR TO PROVIDE:

- CONCRETE -
- 1 - CONCRETE PAD LAYOUT AND SIZE ARE FOR REFERENCE ONLY AND MAY BE ALTERED TO BEST ACCOMMODATE EXISTING FIELD CONDITIONS.
- 2 - ALL CONCRETE SHALL BE 3000 PSI MINIMUM 28 DAY COMPRESSIVE STRENGTH WITH 6% AIR ENTRAPMENT.
- 3 - GRADE SHALL BE SLOPED 2% FROM THE PERIMETER TO THE MAIN DRAINS.
- 4 - A 5 FOOT OVERSPRAY BUFFER ZONE IS INCORPORATED BETWEEN THE PERIMETER AND THE INTENDED AREA OF INFLUENCE, AND IS CALCULATED INTO THE OVERALL DIMENSIONS OF THE CONCRETE PAD.
- 5 - ALL REINFORCEMENT STEEL SHALL BE SUPPLIED AND PLACED IN ACCORDANCE WITH ACI 318-99, AND CRSI MSP-1-01.
- 6 - ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60.
- 7 - EACH WATER FEATURE SHALL BE LOCATED WITHIN A SINGLE CONCRETE PANEL UNLESS OTHERWISE NOTED.
- 8 - OMNIPOD COVER MUST BE CAST FLUSH AND LEVEL WITH THE FINISHED CONCRETE SURFACE.
- 9 - SURFACE SPRAY NOZZLES SHALL BE CAST FLUSH AND LEVEL WITH THE FINISHED CONCRETE.
- 10 - EARTHFORMS MAY BE USED UNDER SLAB.
- 11 - SPRAYGROUND AREA IS 11339.4 SQUARE FEET [1053.4 SQUARE METERS]

1 SPRAY PARK PARTIAL LAYOUT PLAN
SCALE: N.T.S.

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AT
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FOR THE
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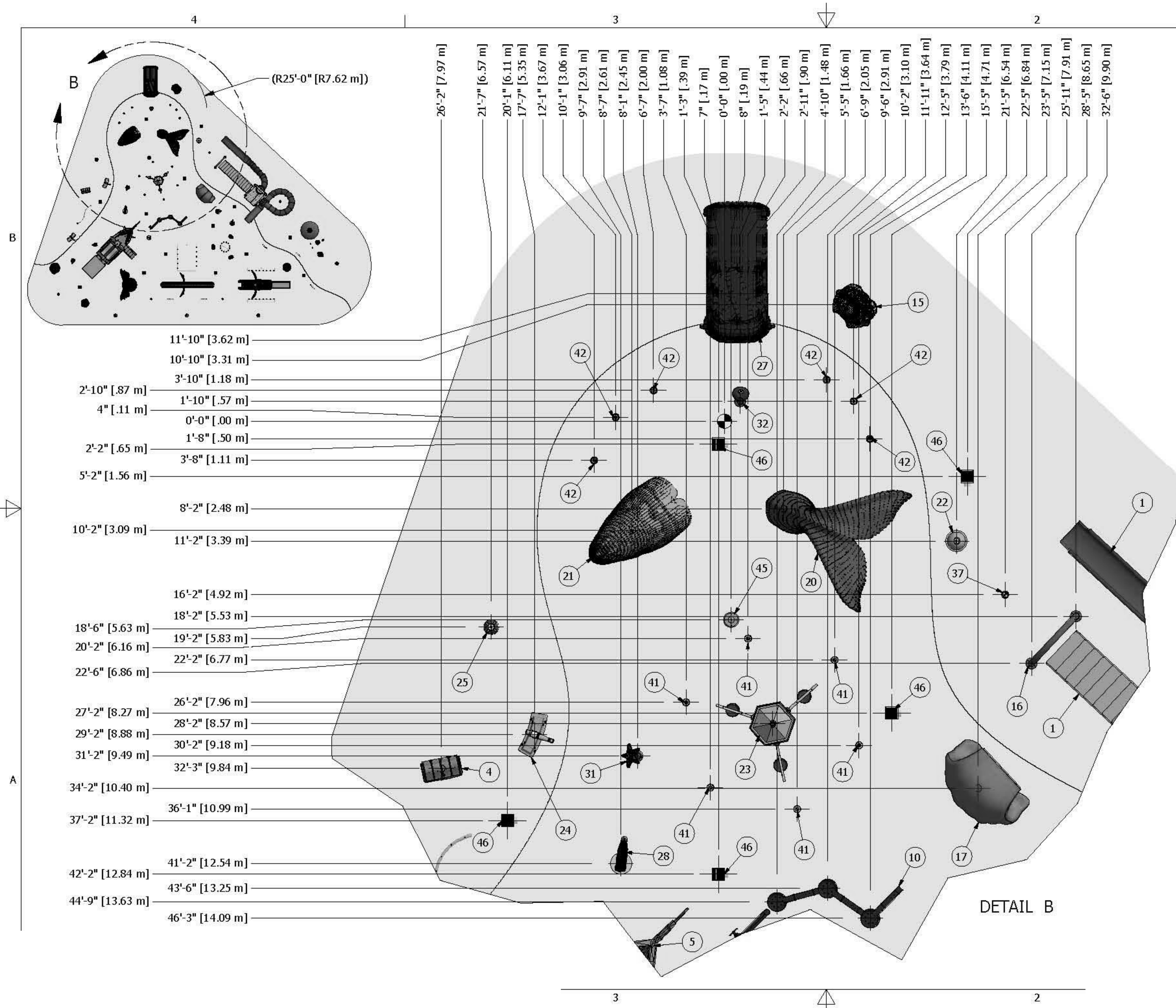
1 09.26.17 BID SET
No. Date Issue or Revision

Drawing Title
SPRAY PARK PARTIAL LAYOUT PLAN

Scale AS INDICATED USA Project No. 2014-110
Drawing Date 09.26.17 Drawing No. AQ-102
Drawn By KAE Checked By Apa

NOTE: SPRAY PARK WATER FEATURES (PARTS LIST) TO BE PURCHASED BY OWNER AND INSTALLED BY CONTRACTOR.

PARTS LIST		
ITEM	QTY	DESCRIPTION
1	1	MONSOON1-201
4	1	TRCH-001-OM
5	1	MNSH-001-OM
10	1	PFPC-012-OM
15	1	SRFB-001-OM
16	1	ARJT-007-OM
17	1	WAVE-001-OM
20	1	WHTL-004-OM
21	1	WHHD-004-OM
22	1	BCHSPN-001-OM
23	1	LKBN-006-OM
24	2	WFCN-014-OM
25	2	PLMT-005-OM
27	1	SBUS-002-OM
28	1	SSCN-001-OM
31	1	SPSF-001-OM
32	1	SPCR-001-OM
41	6	UPJT-007-OM
42	6	GSJT-001-OM
45	4	BOL-004
46	14	DRN12-002



1 SPRAY PARK PARTIAL LAYOUT PLAN
SCALE: N.T.S.

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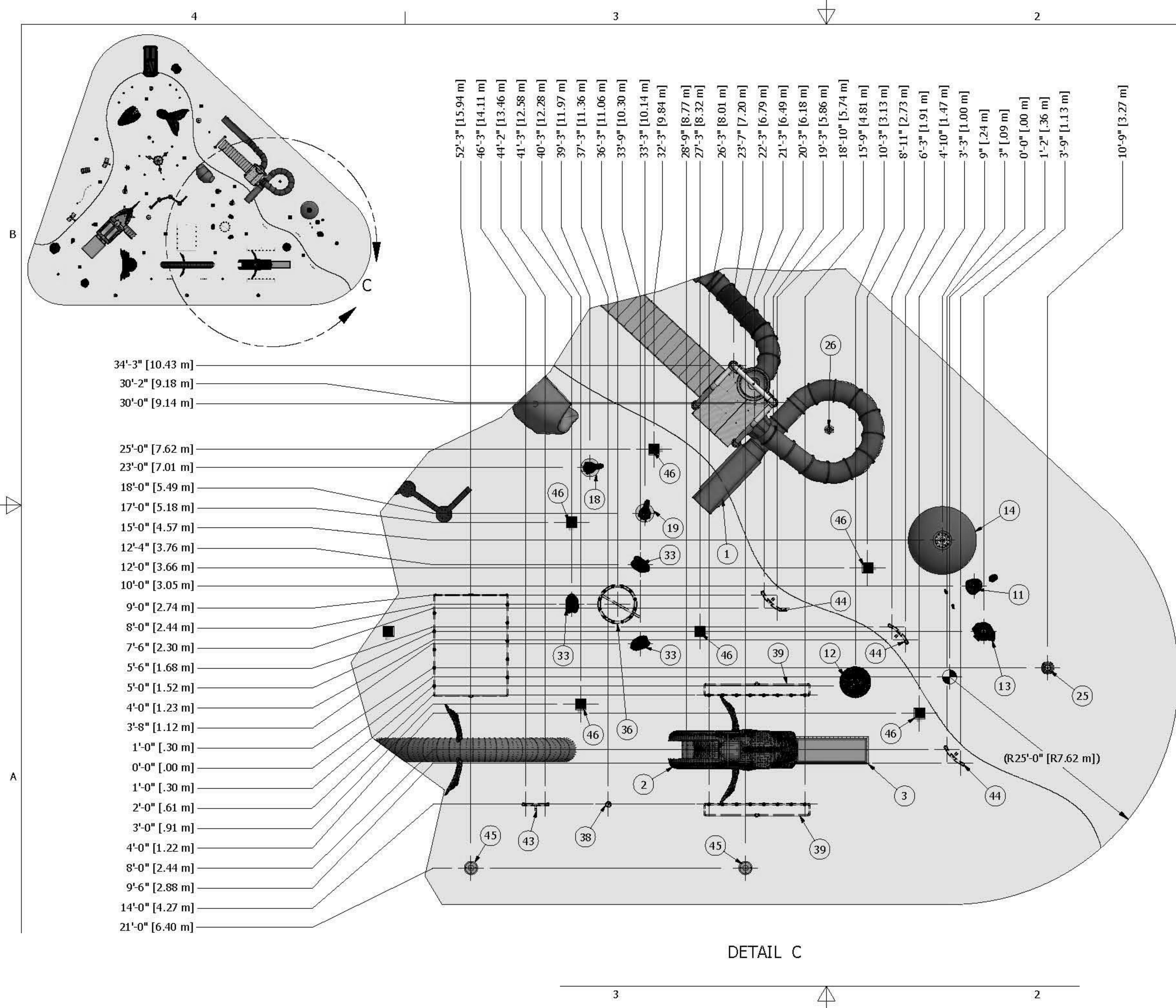
DEMOLITION AND NEW CONSTRUCTION
AT
WHEELER PARK
FOR THE
COUNTY OF UNION

No.	Date	Issue or Revision
1	09.26.17	BID SET

Drawing Title	
SPRAY PARK PARTIAL LAYOUT PLAN	
Scale	USA Project No.
AS INDICATED	2014-110
Drawing Date	Drawing No.
09.26.17	AQ-103
Drawn By	Checked By
KAE	APA

NOTE: SPRAY PARK WATER FEATURES (PARTS LIST) TO BE PURCHASED BY OWNER AND INSTALLED BY CONTRACTOR.

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	MONSOON1-201	MONSOON1-201
2	1	DGSL-001	DRAGON SLIDE
3	1	PAD-3X8	3 x 8 SLIDE EXIT PAD
11	1	CFSU-001-OM	CF SUNBATHER, OMNI
12	1	CFST-003-OM	CF SEBASTIAN STAR, OMNI
13	1	TSBC-001-OM	THEME SPRAY, BEACH BUCKET, OMNI
14	1	RNDP-001-MF-OM	RAIN DROP, MYSTICAL FUN, OMNI
18	1	PLCN-001-OM	PELICAN CANNON W/ TRIANGLE MARKER, OMNI
19	1	PLCN-002-OM	PELICAN CANNON W/ SQUARE MARKER, OMNI
25	2	PLMT-005-OM	PALM TREE SWANKY, OMNI
26	1	PLMT-006	PALM TREE, NO FLOW
33	3	CFFN-001-OM	CF SHARK FIN, OMNI
36	1	CIRT-012	CIRCLE TIME, 12 OUTLET
38	2	TALP-001-OM	TALL TOOLIP SPRAY, OMNI
39	2	TNAR-010	TUNNEL ARCH, 8 OUTLET
43	2	PPJT-003	POP JET, 4 OUTLET
44	3	PPJT-004	POP JET, CURVED, 4 OUTLET
45	4	BOL-004	6" BOLLARD, POLYURETHANE PHOTO SENSOR
46	14	DRN12-002	DRAIN-12X12X12 FIBERGLASS-6"



1 SPRAY PARK PARTIAL LAYOUT PLAN
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AA

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DEMOLITION AND NEW CONSTRUCTION
AT
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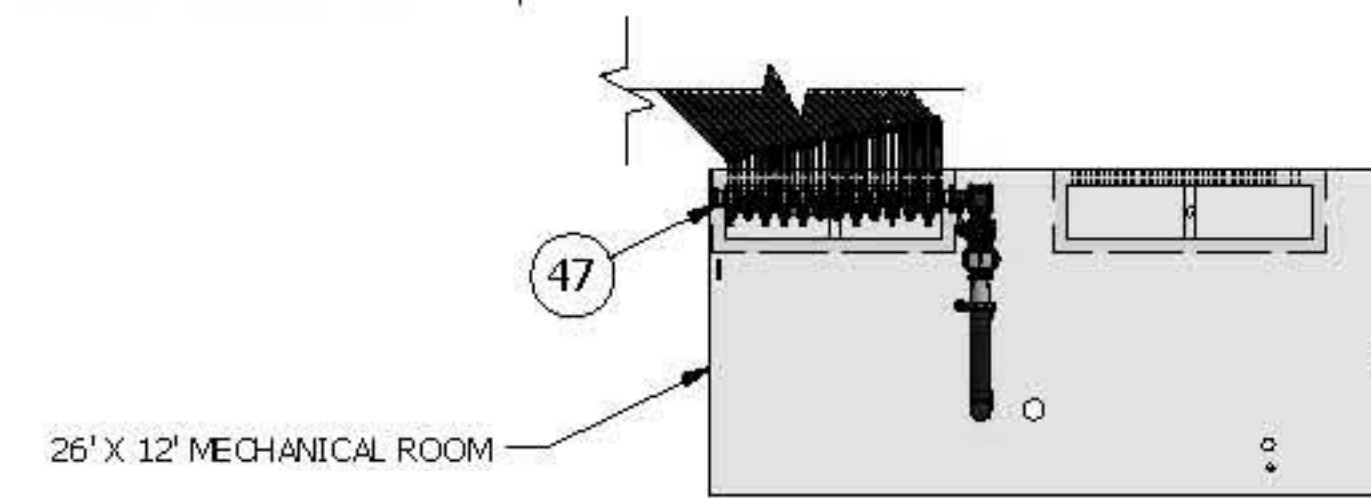
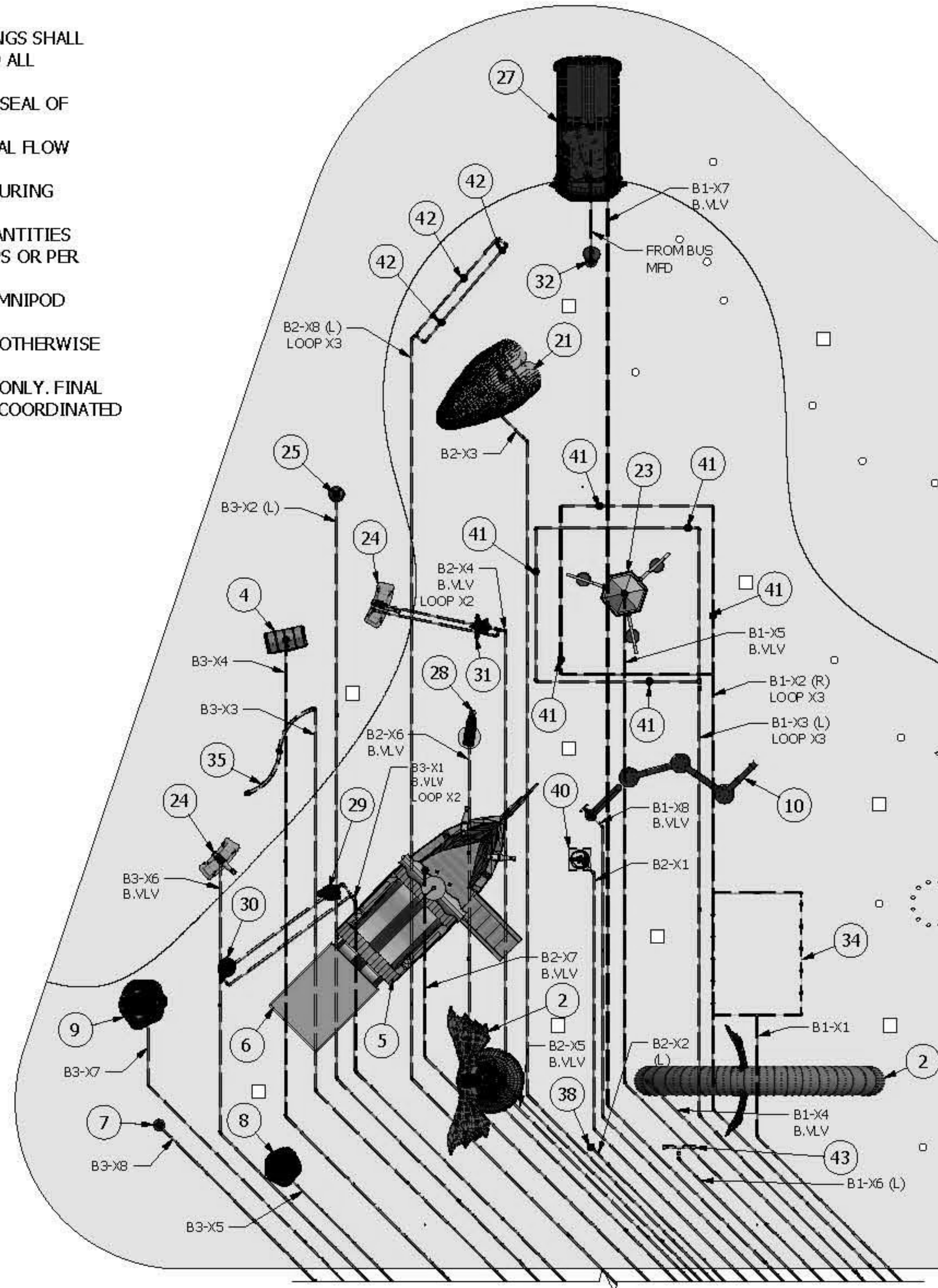
Drawing Title	
SPRAY PARK PARTIAL LAYOUT PLAN	
Scale	USA Project No.
AS INDICATED	2014-110
Drawing Date	Drawing No.
09.26.17	AQ-104
Drawn By	Checked By
KAE	APA

NOTE: SPRAY PARK WATER FEATURES (PARTS LIST) TO BE PURCHASED BY OWNER AND INSTALLED BY CONTRACTOR.

CONTRACTOR TO PROVIDE:

PVC PIPING -

- 1 - SCHEDULE 80 PVC PIPE AND SOCKET TYPE FITTINGS SHALL CONFORM TO ASTM D2467, ASTM D1785-12, AND ALL APPLICABLE LOCAL CODES.
- 2 - ALL PVC PIPING SHALL BE STAMPED WITH N.S.F. SEAL OF APPROVAL FOR POTABLE WATER.
- 3 - ALL PIPING SHALL BE LABELED WITH DIRECTIONAL FLOW ARROWS.
- 4 - ALL PIPING TO BE PRESSURE TESTED BEFORE POURING CONCRETE.
- 5 - PIPING DESIGNED TO CARRY THE REQUIRED QUANTITIES OF WATER AT VELOCITIES NOT TO EXCEED 10 FPS OR PER LOCAL CODES AND REGULATIONS.
- 6 - SUPPLY LINES TO BE CHEMICALLY WELDED TO OMNIPOD FEATURE RECEIVER.
- 7 - ALL PIPING TO BE 2" SCHEDULE 80 PVC UNLESS OTHERWISE SPECIFIED.
- 8 - DRAWINGS ARE INTENDED FOR SCHEMATIC USE ONLY. FINAL PIPE LOCATIONS SHALL BE FIELD VERIFIED AND COORDINATED WITH CONTRACTOR.



PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
2	1	DGSL-001	DRAGON SLIDE
4	1	TRCH-001-OM	TREASURE CHEST, OMNI
5	1	MNSH-001-OM	MINI PIRATE SHIP, OMNI
6	1	PAD-6X8	6 x 8 SLIDE EXIT PAD
7	1	BLSJ-005-OM	BELLE SPRAY JET, OMNI
8	1	CFSC-001-OM	CF CROCODILE STEVE, OMNI
9	1	CFSK-001-OM	CF AQUA SHARK, OMNI
10	1	PFPC-012-OM	POOLS N' FALLS PLAYCENTER 6V W/ SAIL, OMNI
21	1	WHHD-004-OM	WHALE HEAD LOWER PROFILE MEDIUM SIZE, OMNI
23	1	LKBN-006-OM	LEAKIN BEACON 3 ARM BUCKET OMNI
24	2	WFCN-014-OM	CITY WALL CANNON W /BUTTON, OMNI
25	2	PLMT-005-OM	PALM TREE SWANKY, OMNI
27	1	SBUS-002-OM	SURFER BUS DELUXE XL, OMNI
28	1	SSCN-001-OM	SERPENT CANNON, OMNI
29	1	WFCN-017-OM	WATER FUN CANNON TURTLE, OMNI
30	1	WFCN-023-OM	WATER FUN CANNON FISH, OMNI
31	1	SPSF-001-OM	SPINNING STARFISH, OMNI
32	1	SPCR-001-OM	SPINNING CRAB, OMNI
34	1	SHWT-004	SHOWER TUNNEL
35	1	SPBG-003	SPRAY BRIGADE POPKORN JET
38	2	TALP-001-OM	TALL TOOLIP SPRAY, OMNI
40	1	FMGS-003	FOAM GEYSER
41	6	UPJT-007-OM	UPSTREAM JET, OMNI
42	6	GSJT-001-OM	GUSHER JET, OMNI
43	2	PPJT-003	POP JET, 4 OUTLET
47	1	MANIFOLD-6-24	MANIFOLD-6" W/24-2" OUTLETS, TRUE UNION, SCH 80 PVC

1 SPRAY PARK PARTIAL LAYOUT PLAN
SCALE: N.T.S.

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DEMOLITION AND NEW CONSTRUCTION
AT
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FOR THE
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1 09.26.17 BID SET

No. Date Issue or Revision

Drawing Title
SPRAY PARK PARTIAL LAYOUT PLAN

Scale AS INDICATED USA Project No. 2014-110

Drawing Date 09.26.17 Drawing No.

Drawn By KAE Checked By ApA AQ-105



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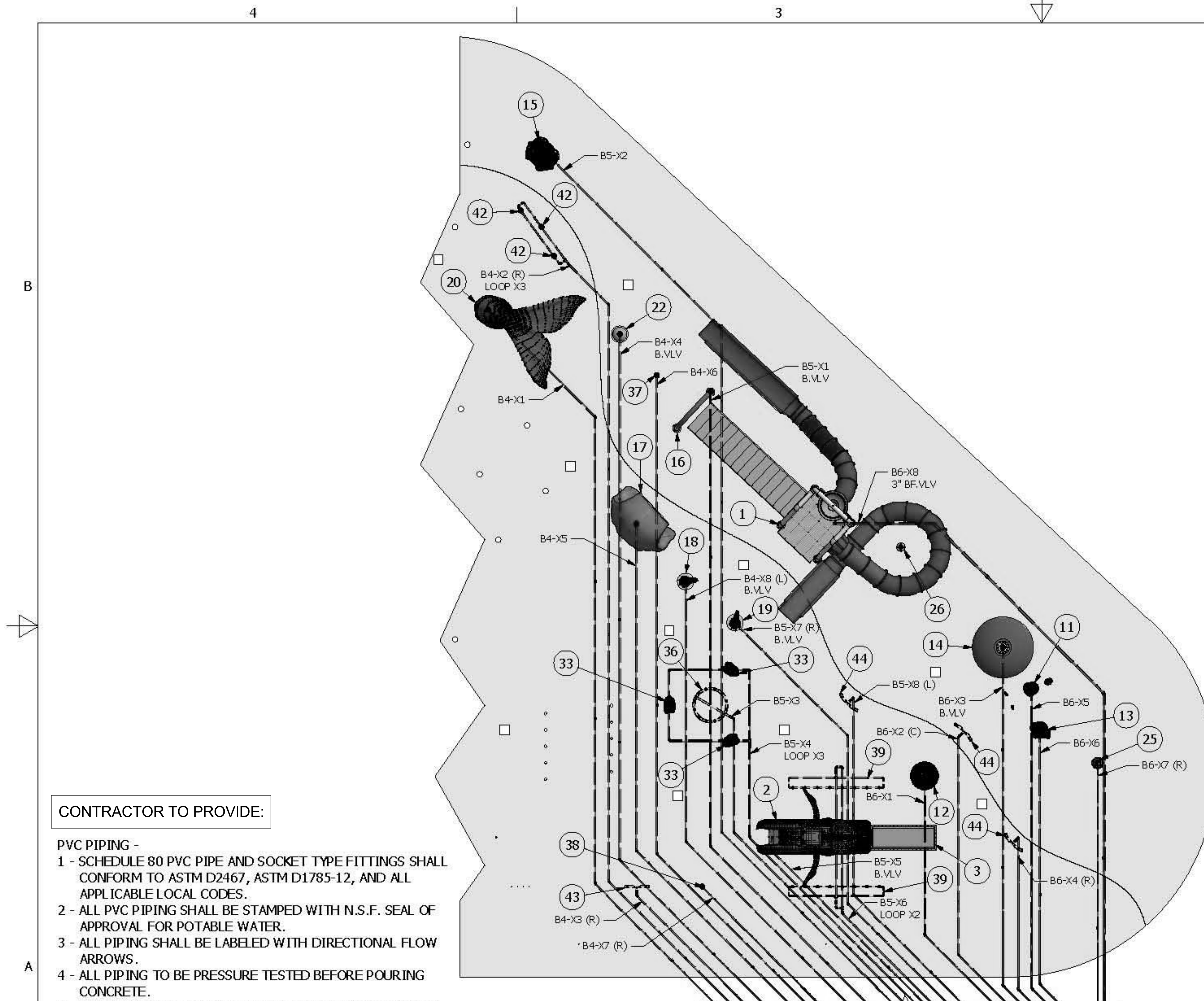
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NOTE: SPRAY PARK WATER FEATURES (PARTS LIST) TO BE PURCHASED BY OWNER AND INSTALLED BY CONTRACTOR.

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	MONSOON1-201	MONSOON1-201
2	1	DGSL-001	DRAGON SLIDE
3	1	PAD-3X8	3 x 8 SLIDE EXIT PAD
11	1	CFSU-001-OM	CF SUNBATHER, OMNI
12	1	CFST-003-OM	CF SEBASTIAN STAR, OMNI
13	1	TSBC-001-OM	THEME SPRAY, BEACH BUCKET, OMNI
14	1	RNDP-001-MF-OM	RAIN DROP, MYSTICAL FUN, OMNI
15	1	SRFB-001-OM	SURF'S UP BOARDS, OMNI
16	1	ARJT-007-OM	ARCH JET WITH SIGN, OMNI
17	1	WAVE-001-OM	BIG KAHUNA WAVE, OMNI
18	1	PLCN-001-OM	PELICAN CANNON W/ TRIANGLE MARKER, OMNI
19	1	PLCN-002-OM	PELICAN CANNON W/ SQUARE MARKER, OMNI
20	1	WHTL-004-OM	WHALE TAIL LIFE SIZE SHORT, OMNI
22	1	BCHSPN-001-OM	BEACH BALL SPINNER, OMNI
25	2	PLMT-005-OM	PALM TREE SWANKY, OMNI
26	1	PLMT-006	PALM TREE, NO FLOW
33	3	CFFN-001-OM	CF SHARK FIN, OMNI
36	1	CIRT-012	CIRCLE TIME, 12 OUTLET
37	1	SFJT-003-OM	SLANT FINGER JET, OMNI
38	2	TALP-001-OM	TALL TOOLIP SPRAY, OMNI
39	2	TNAR-010	TUNNEL ARCH, 8 OUTLET
42	6	GSJT-001-OM	GUSHER JET, OMNI
43	2	PPJT-003	POP JET, 4 OUTLET
44	3	PPJT-004	POP JET, CURVED, 4 OUTLET
48	1	MANIFOLD-6-24	MANIFOLD-6" W/23-2" & 1-3" OUTLETS, TRUE UNION, SCH 80 PVC



CONTRACTOR TO PROVIDE:

- PVC PIPING -**
- 1 - SCHEDULE 80 PVC PIPE AND SOCKET TYPE FITTINGS SHALL CONFORM TO ASTM D2467, ASTM D1785-12, AND ALL APPLICABLE LOCAL CODES.
 - 2 - ALL PVC PIPING SHALL BE STAMPED WITH N.S.F. SEAL OF APPROVAL FOR POTABLE WATER.
 - 3 - ALL PIPING SHALL BE LABELED WITH DIRECTIONAL FLOW ARROWS.
 - 4 - ALL PIPING TO BE PRESSURE TESTED BEFORE POURING CONCRETE.
 - 5 - PIPING DESIGNED TO CARRY THE REQUIRED QUANTITIES OF WATER AT VELOCITIES NOT TO EXCEED 10 FPS OR PER LOCAL CODES AND REGULATIONS.
 - 6 - SUPPLY LINES TO BE CHEMICALLY WELDED TO OMNIPOD FEATURE RECEIVER.
 - 7 - ALL PIPING TO BE 2" SCHEDULE 80 PVC UNLESS OTHERWISE SPECIFIED.
 - 8 - DRAWINGS ARE INTENDED FOR SCHEMATIC USE ONLY. FINAL PIPE LOCATIONS SHALL BE FIELD VERIFIED AND COORDINATED WITH CONTRACTOR.

1 SPRAY PARK PARTIAL LAYOUT PLAN
SCALE: N.T.S.

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DEMOLITION AND NEW CONSTRUCTION

AT
WHEELER PARK
FOR THE
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1 09.26.17 BID SET

No. Date Issue or Revision

Drawing Title
SPRAY PARK PARTIAL LAYOUT PLAN

Scale AS INDICATED USA Project No. 2014-110

Drawing Date 09.26.17 Drawing No.

Drawn By KAE Checked By APA AQ-106



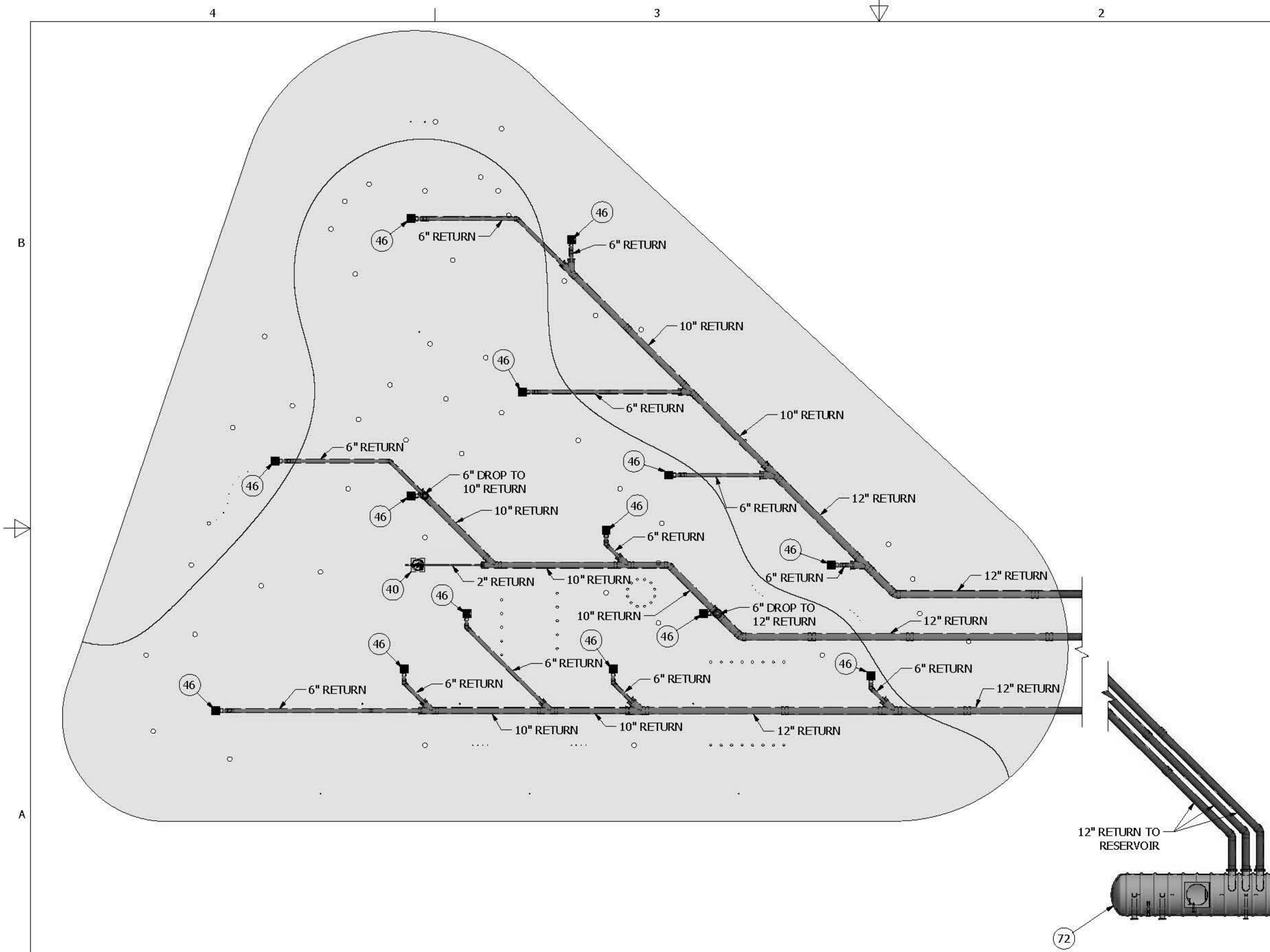
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Susan H. Dehart, AIA

NOTE: SPRAY PARK WATER FEATURES (PARTS LIST) TO BE PURCHASED BY OWNER AND INSTALLED BY CONTRACTOR.

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
40	1	FMGS-003	FOAM GEYSER
46	14	DRN12-002	DRAIN-12X12X12 FIBERGLASS-6"
72	1	RSVR-F45-3-2-01	4500 GALLON RESERVOIR, FIBERGLASS



CONTRACTOR TO PROVIDE PIPING:

- DRAINS -**
- 1 - DRAIN PIPE AND FITTINGS SHALL CONFORM TO ASTM D2665. CONNECTIONS SHALL BE A SOLVENT WELD, UNLESS OTHERWISE SPECIFIED.
 - 2 - ALL PVC PIPING SHALL BE STAMPED WITH N.S.F. SEAL OF APPROVAL FOR POTABLE WATER.
 - 3 - ALL PIPING SHALL BE LABELED WITH DIRECTIONAL FLOW ARROWS.
 - 4 - SOLVENT WELD CEMENT FOR THE SOCKET CONNECTIONS SHALL MEET THE REQUIREMENTS OF ASTM D2564.
 - 5 - PIPING SHALL BE DESIGNED TO CARRY THE REQUIRED QUANTITIES OF WATER AT VELOCITIES NOT EXCEEDING 4 FEET PER SECOND IN GRAVITY PIPING.
 - 6 - ALL GRAVITY PIPING TO BE SLOPED A MINIMUM OF 0.5% TO RESERVOIR.
 - 7 - DRAWINGS ARE INTENDED FOR SCHEMATIC USE ONLY. FINAL PIPE, RESERVOIR, AND SEDIMENT TRAP LOCATIONS SHALL BE FIELD VERIFIED AND COORDINATED WITH CONTRACTOR.

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DEMOLITION AND NEW CONSTRUCTION

AT
WHEELER PARK
FOR THE
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No. 1 Date 09.26.17 Issue or Revision BID SET

Drawing Title
SPRAY PARK RETURN PIPING LAYOUT PLAN

Scale AS INDICATED USA Project No. 2014-110

Drawing Date 09.26.17 Drawing No.

Drawn By KAE Checked By ApA AQ-107

1 SPRAY PARK RETURN PIPING LAYOUT PLAN
SCALE: N.T.S.



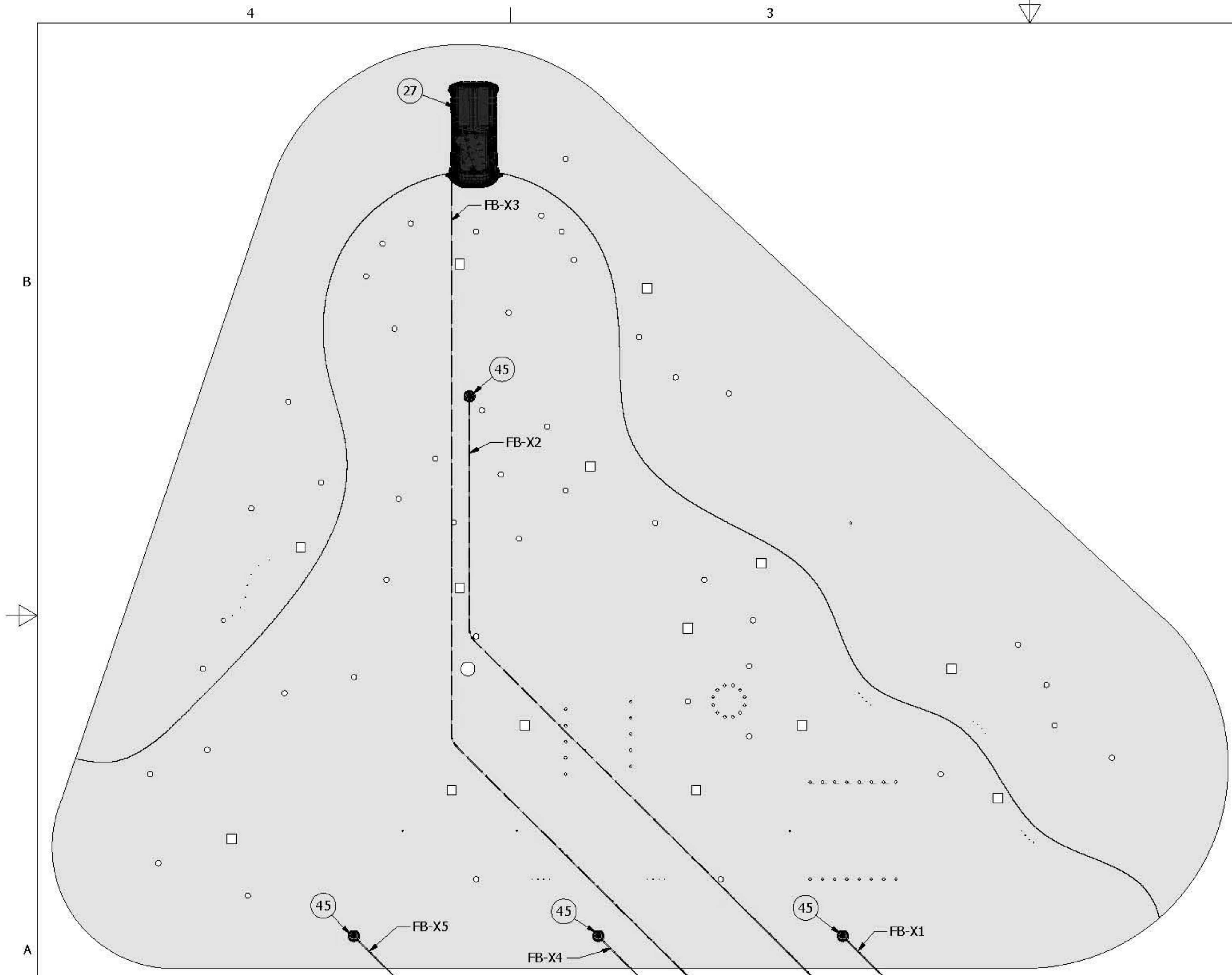
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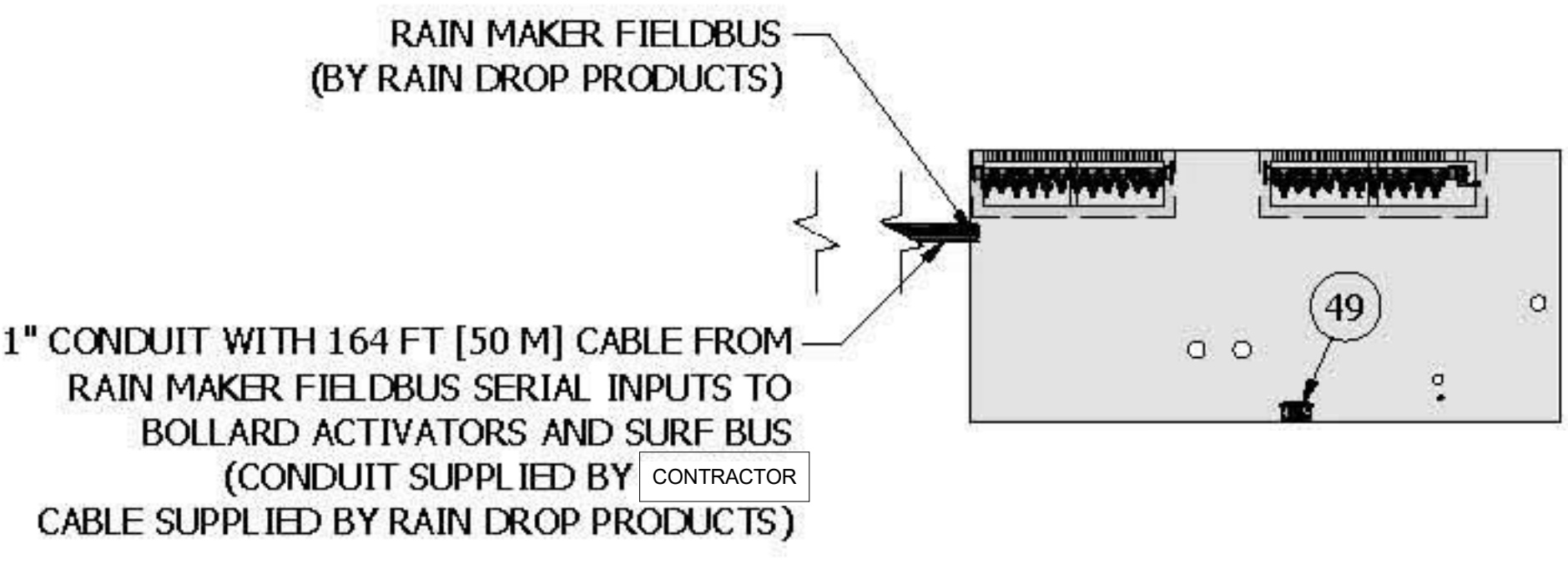
NOTES:
1. SPRAY PARK WATER FEATURES (PARTS LIST) TO BE PURCHASED BY OWNER AND INSTALLED BY CONTRACTOR.
2. ANY NOTES INDICATING "TO BE SUPPLIED BY RAINDROP PRODUCTS" WILL BE PURCHASED BY CONTRACTOR AND INSTALLED BY CONTRACTOR., TYP.

PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
27	1	SBUS-002-OM	SURFER BUS DELUXE XL, OMNI
45	4	BOL-004	6" BOLLARD, POLYURETHANE PHOTO SENSOR
49	1	RNMK-VFD-032	RAIN MAKER FOR VFD, 32 OUTPUT



CONTRACTOR TO PROVIDE:

- ELECTRICAL -**
- 1 - ALL ELECTRICAL SHALL BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC) AND ALL APPLICABLE LOCAL CODES. IN ADDITION, ALL WORK SHALL BE IN ACCORDANCE WITH THE AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM).
 - 2 - THE CONTRACTOR SHALL VERIFY THE SERVICE REQUIREMENTS FOR ALL PIECES OF EQUIPMENT.
 - 3 - DRAWINGS ARE INTENDED FOR SCHEMATIC USE ONLY. FINAL CONDUIT AND CONTROLLER LOCATIONS SHALL BE FIELD VERIFIED AND COORDINATED WITH CONTRACTOR.



1 SPRAY PARK ELECTRICAL LAYOUT PLAN
SCALE: N.T.S.

Signature & License No. AJ16116

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DEMOLITION AND NEW CONSTRUCTION
AT
WHEELER PARK
FOR THE
COUNTY OF UNION

No.	Date	Issue or Revision
1	09.26.17	BID SET

Drawing Title
SPRAY PARK ELECTRICAL LAYOUT PLAN

Scale	USA Project No.
AS INDICATED	2014-110
Drawing Date	Drawing No.
09.26.17	AQ-108
Drawn By	Checked By
KAE	APA

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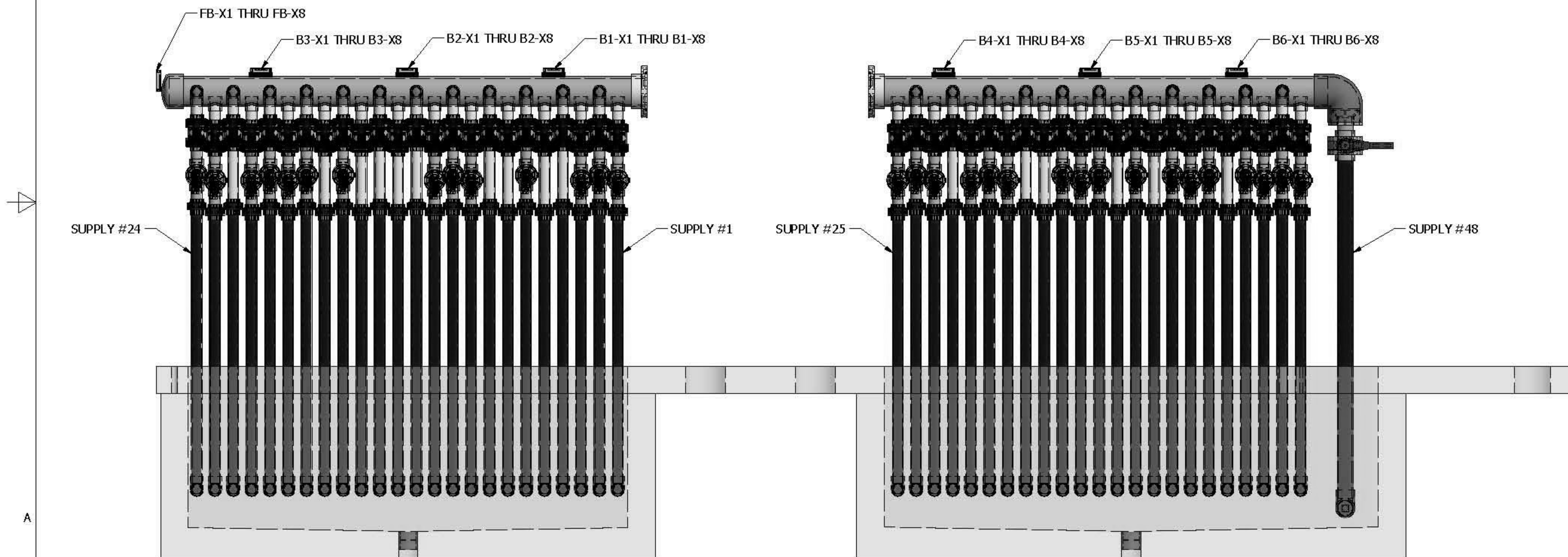
NOTES:
1. SPRAY PARK WATER FEATURES (PARTS LIST) TO BE PURCHASED BY OWNER AND INSTALLED BY CONTRACTOR.
2. ANY NOTES INDICATING "TO BE SUPPLIED BY RAINDROP PRODUCTS" WILL BE PURCHASED BY CONTRACTOR AND INSTALLED BY CONTRACTOR., TYP.

TABLE				TABLE				TABLE						
SUPPLY NO.	OUTPUT ADDRESS	DESCRIPTION	QTY IN LOOP	SUPPLY	SUPPLY NO.	OUTPUT ADDRESS	DESCRIPTION	QTY IN LOOP	SUPPLY	SUPPLY NO.	OUTPUT ADDRESS	DESCRIPTION	QTY IN LOOP	SUPPLY GPM
1	B1-X1	SHOWER TUNNEL	N/A	37.9	17	B3-X1 (B.VLV)	WATER FUN CANNON TURTLE/FISH, OMNI	2	5	33	B5-X1 (B.VLV)	ARCH JET WITH SIGN, OMNI	N/A	45.4
2	B1-X2	UPSTREAM JET, OMNI (R)	3	20.1	18	B3-X2	PALM TREE SWANKY, OMNI (L)	N/A	7.9	34	B5-X2	SURF'S UP BOARDS, OMNI	N/A	40.7
3	B1-X3	UPSTREAM JET, OMNI (L)	3	20.1	19	B3-X3	SPRAY BRIGADE POPKORN JET	N/A	41.7	35	B5-X3	CIRCLE TIME, 12 OUTLET	N/A	20.2
4	B1-X4 (B.VLV)	DRAGON ARCH	N/A	65	20	B3-X4	TREASURE CHEST, OMNI	N/A	15.2	36	B5-X4	CF SHARK FIN, OMNI	3	34.2
5	B1-X5 (B.VLV)	LEAKIN BEACON 3 ARM BUCKET OMNI	N/A	69.6	21	B3-X5	CF CROCODILE STEVE, OMNI	N/A	15	37	B5-X5 (B.VLV)	DRAGON SLIDE	N/A	35
6	B1-X6	POP JET, 4 OUTLET (L)	N/A	27	22	B3-X6 (B.VLV)	CITY WALL CANNON W /BUTTON, OMNI	N/A	2.5	38	B5-X6	TUNNEL ARCH, 8 OUTLET	2	46
7	B1-X7 (B.VLV)	SURFER BUS DELUXE XL, OMNI & SPINNING CRAB, OMNI	N/A	93.8	23	B3-X7	CF AQUA SHARK, OMNI	N/A	16.8	39	B5-X7 (B.VLV)	PELICAN CANNON W/ MARKER, OMNI (R)	N/A	5.1
8	B1-X8 (B.VLV)	POOLS N' FALLS PLAYCENTER 6V W/ SAIL, OMNI	N/A	66.1	24	B3-X8	BELLE SPRAY JET, OMNI	N/A	30	40	B5-X8	POP JET, CURVED, 4 OUTLET (L)	N/A	27
9	B2-X1	FOAM GEYSER	N/A	30	25	B4-X1	WHALE TAIL LIFE SIZE SHORT, OMNI	N/A	10	41	B6-X1	CF SEBASTIAN STAR, OMNI	N/A	11.4
10	B2-X2	TALL TOOLIP SPRAY, OMNI (L)	N/A	10.6	26	B4-X2	GUSHER JET, OMNI (R)	3	45.6	42	B6-X2	POP JET, CURVED, 4 OUTLET (C)	N/A	27
11	B2-X3	WHALE HEAD LOWER PROFILE MEDIUM SIZE, OMNI	N/A	15.3	27	B4-X3	POP JET, 4 OUTLET (R)	N/A	27	43	B6-X3 (B.VLV)	RAIN DROP, MYSTICAL FUN, OMNI	N/A	3.1
12	B2-X4 (B.VLV)	CITY WALL CANNON W /BUTTON, OMNI & SPINNING STARFISH, OMNI	2	6.3	28	B4-X4 (B.VLV)	BEACH BALL SPINNER, OMNI	N/A	24.4	44	B6-X4	POP JET, CURVED, 4 OUTLET (R)	N/A	27
13	B2-X5 (B.VLV)	DRAGON TAIL	N/A	35	29	B4-X5	BIG KAHUNA WAVE, OMNI	N/A	36.5	45	B6-X5	CF SUNBATHER, OMNI	N/A	6.7
14	B2-X6 (B.VLV)	SERPENT CANNON, OMNI	N/A	11.4	30	B4-X6	SLANT FINGER JET, OMNI	N/A	8	46	B6-X6	THEME SPRAY, BEACH BUCKET, OMNI	N/A	11.4
15	B2-X7 (B.VLV)	MINI PIRATE SHIP, OMNI	N/A	98.5	31	B4-X7	TALL TOOLIP SPRAY, OMNI (R)	N/A	10.6	47	B6-X7	PALM TREE SWANKY, OMNI (R)	N/A	7.9
16	B2-X8	GUSHER JET, OMNI (L)	3	45.6	32	B4-X8 (B.VLV)	PELICAN CANNON W/ MARKER, OMNI (L)	N/A	5.1	48	B6-X8 (3" BF.VLV)	MONSOON1-201	N/A	194.5

SPRAYGROUND
MAXIMUM INTENDED FLOW - 1508.8 GPM
AVERAGE SEQUENCED FLOW - 1245.8 GPM

MANIFOLD 1
MAXIMUM INTENDED FLOW - 785.6 GPM
AVERAGE SEQUENCED FLOW - 669.4 GPM

MANIFOLD 2
MAXIMUM INTENDED FLOW - 723.2 GPM
AVERAGE SEQUENCED FLOW - 576.4 GPM



1 SPRAY PARK MANIFOLD LAYOUT
SCALE: N.T.S.

AA

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DEMOLITION AND NEW CONSTRUCTION
AT
WHEELER PARK
FOR THE
COUNTY OF UNION

1 09.26.17 BID SET

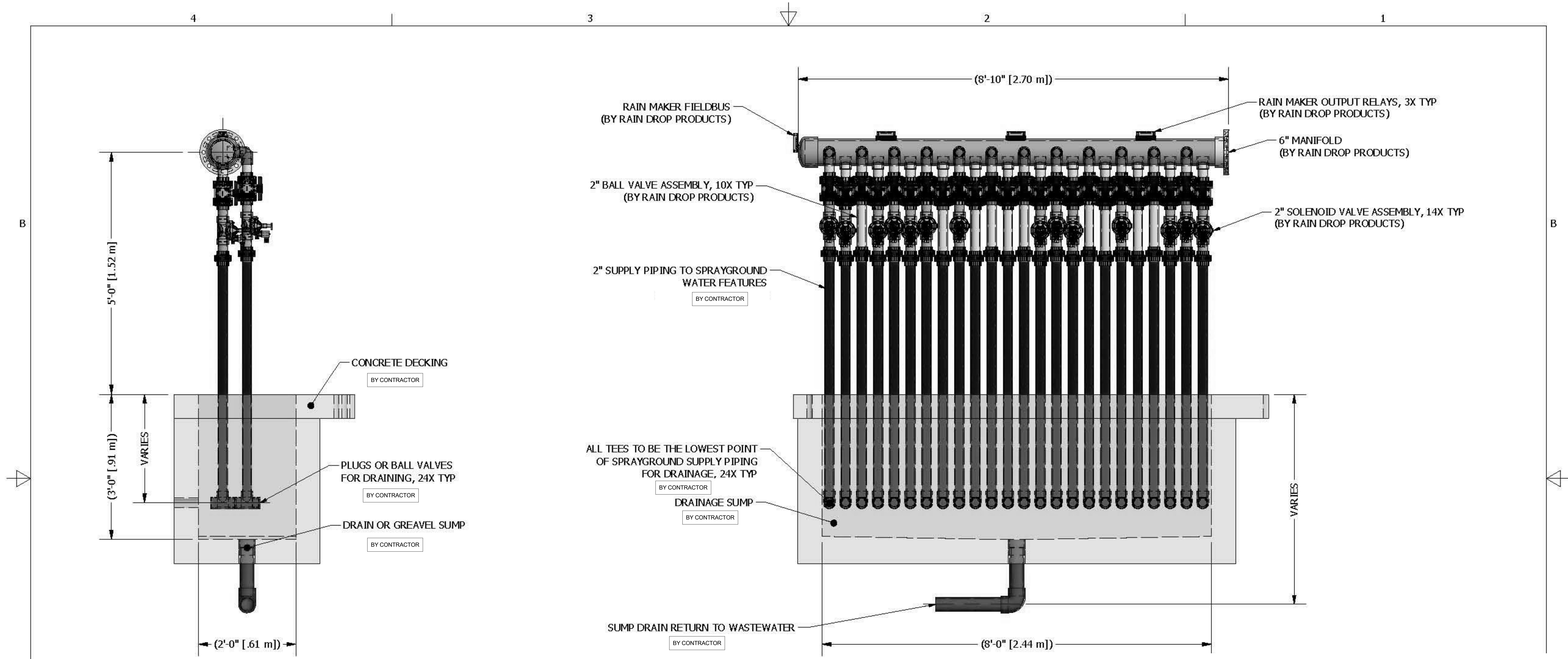
No. Date Issue or Revision

Drawing Title
SPRAY PARK
MANIFOLD
LAYOUT

Scale AS INDICATED USA Project No. 2014-110

Drawing Date 09.26.17 Drawing No.

Drawn By KAE Checked By APA AQ-109



CONTRACTOR TO PROVIDE:

MANIFOLD NOTES -

- 1 - IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROPERLY SUPPORT THE SPRAYGROUND MANIFOLD.
- 2 - ALL PIPING SHALL BE SUPPORTED Laterally AS WELL AS VERTICALLY. USE OF PROPER HANGERS FOR THE CONDITIONS IS ESSENTIAL.
- 3 - ALL HANGERS, PIPE SUPPORTS, THREADED ROD, HARDWARE, ETC. SHALL BE SUPPLIED
- 4 - DRAWINGS ARE INTENDED FOR SCHEMATIC USE ONLY. FINAL LOCATION SHALL BE FIELD VERIFIED AND COORDINATED WITH THE CONTRACTOR.

1 SPRAY PARK MANIFOLD LAYOUT
SCALE: N.T.S.

NOTES:
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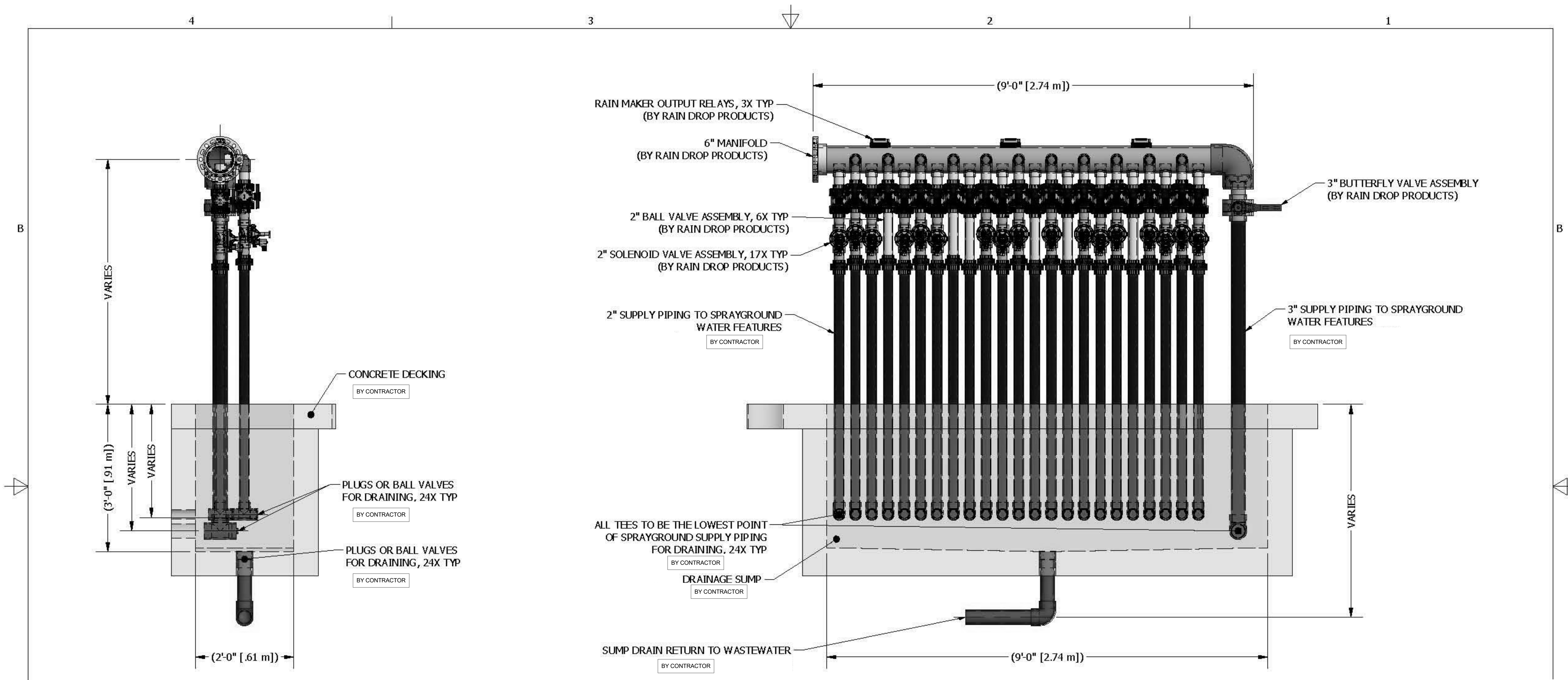
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Drawing Title
SPRAY PARK MANIFOLD LAYOUT

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09.26.17	AQ-111
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- CONTRACTOR TO PROVIDE:**
- MANIFOLD NOTES -**
- 1 - IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROPERLY SUPPORT THE SPRAYGROUND MANIFOLD.
 - 2 - ALL PIPING SHALL BE SUPPORTED Laterally AS WELL AS VERTICALLY. USE OF PROPER HANGERS FOR THE CONDITIONS IS ESSENTIAL.
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① **SPRAY PARK MANIFOLD LAYOUT**
SCALE: N.T.S.

NOTES:

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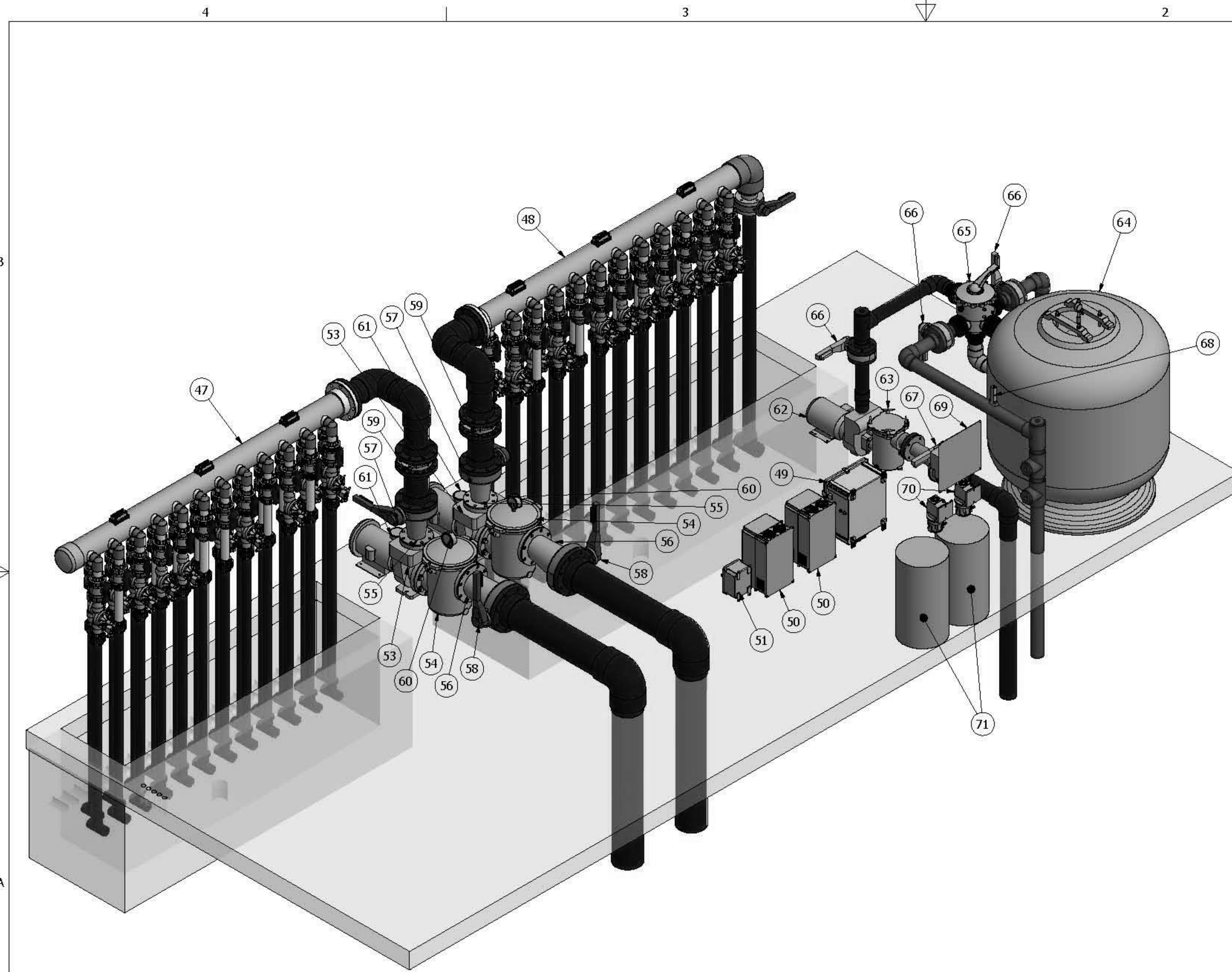


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NOTE: SPRAY PARK WATER FEATURES (PARTS LIST) TO BE PURCHASED BY OWNER AND INSTALLED BY CONTRACTOR.



PARTS LIST			
ITEM	QTY	PART NUMBER	DESCRIPTION
47	1	MANIFOLD-6-24	MANIFOLD-6" W/24-2" OUTLETS, TRUE UNION, SCH 80 PVC
48	1	MANIFOLD-6-24	MANIFOLD-6" W/23-2" & 1-3" OUTLETS, TRUE UNION, SCH 80 PVC
49	1	RNMK-VFD-032	RAIN MAKER FOR VFD, 32 OUTPUT
50	2	VFD-151230	Polyspede Series AC Drive, 15 Hp, 240V 1-Phase Input, 3-Phase Output
51	1	SWT-004	SWITCH, DISCONNECT 10-16 FLA
72	1	RSVR-F45-3-2-01	4500 GALLON RESERVOIR, FIBERGLASS
53	2	PMP6-650-PK3-01	PUMP, CSP SERIES 1.5HP/3PH/200-208VAC 60Hz, STA-RITE
54	2	PMP6-650-PK3-01	STRAINER, PKG 184 FOR CSP SERIES PUMP, STA-RITE
55	2	PMP6-650-PK3-01	CONCENTRIC REDUCER, 6" X 4", S.S.
56	2	PMP6-650-PK3-01	ECCENTRIC REDUCER, 8" X 6", S.S.
57	2	PMP6-650-PK3-01	BUTTERFLY VALVE, 6" LEVER OPERATED (DISCHARGE)
58	2	PMP6-650-PK3-01	BUTTERFLY VALVE, 8" LEVER OPERATED (PUMP SUCTION)
59	2	PMP6-650-PK3-01	CHECK VALVE, 6" SCH 80 PVC
60	2	PMP6-650-PK3-01	GAUGE, PRESSURE/VACUUM COMBINATION, 30-60 PSI
61	2	PMP6-650-PK3-01	GAUGE, PRESSURE, 0-60 PSI
62	1	FLT-180PK3S	PUMP, D-SERIES 5HP/3PH/230 460VAC, STA-RITE
63	1	FLT-180PK3S	STRAINER, PKG 98, STA-RITE
64	1	FLT-180PK3S	48" SAND FILTER, FIBERGLASS, WATERCO
65	1	FLT-180PK3S	MULTIPOINT VALVE, 3" PORTS, WATERCO
66	3	FLT-180PK3S	BUTTERFLY VALVE, 3" LEVER OPERATED (DISCHARGE, BACKFLOW, RESTRICTION)
67	1	FLT-180PK3S	BUTTERFLY VALVE, 4" LEVER OPERATED (PUMP SUCTION)
68	1	FLT-180PK3S	FLOW METER, 3" ACRYLIC BODY, BLUE-WHITE
69	1	CHL-750PK1L	CHEMICAL CONTROLLER, CAT 2000, 120VAC, 50/60Hz, HAYWARD
70	2	CHL-750PK1L	PUMP, 45 SERIES CHEMICAL FEED, 0-50 GPD, 120VAC, 60Hz, STENNER
71	2	CHL-750PK1L	15 GALLON CLOSED TOP TANK

1 SPRAY PARK MECHANICAL ROOM LAYOUT
SCALE: N.T.S.

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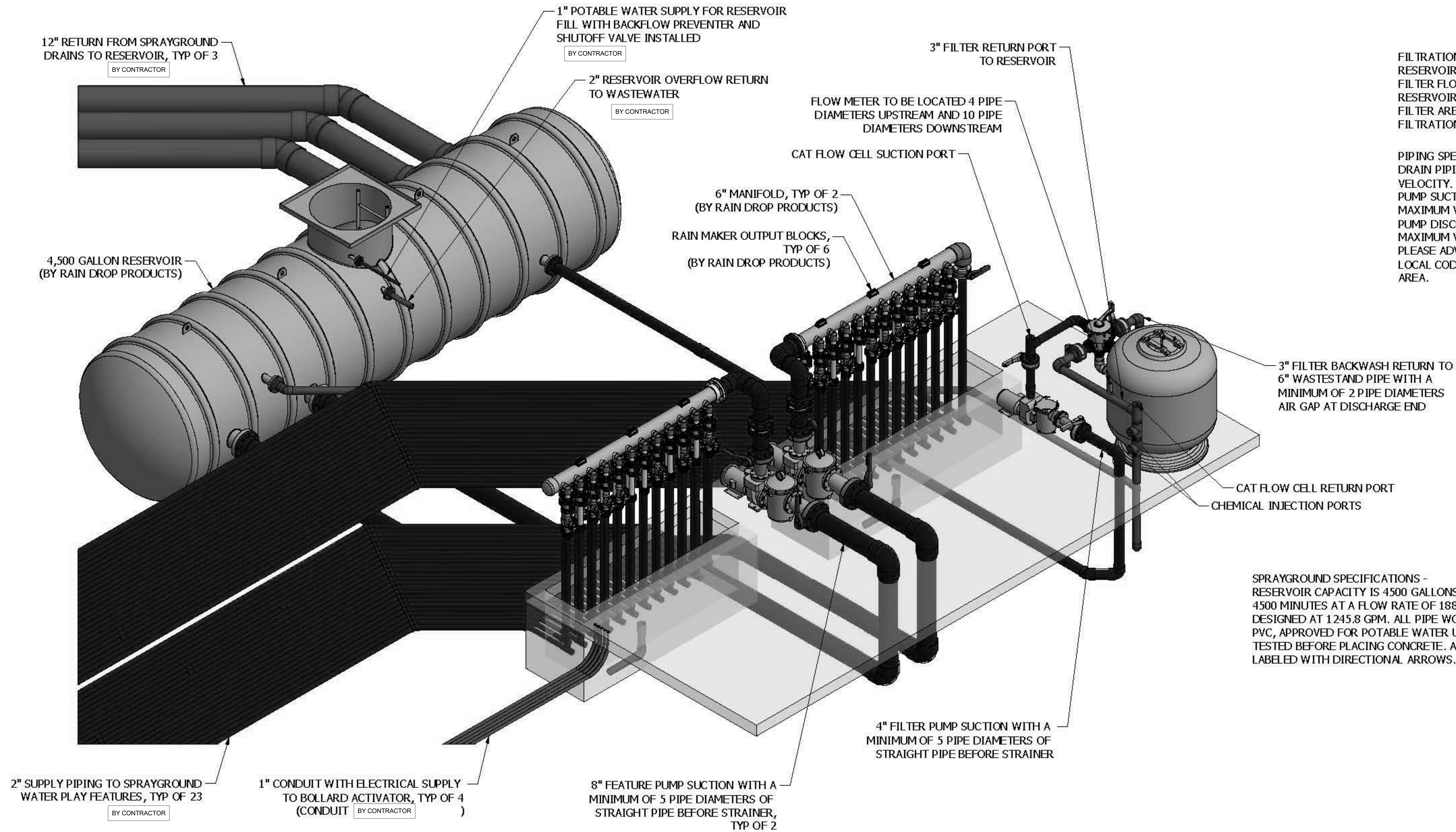
Drawing Title
SPRAY PARK MECHANICAL ROOM LAYOUT

Scale AS INDICATED USA Project No. 2014-110
Drawing Date 09.26.17 Drawing No.
Drawn By KAE Checked By ApA
AQ-112

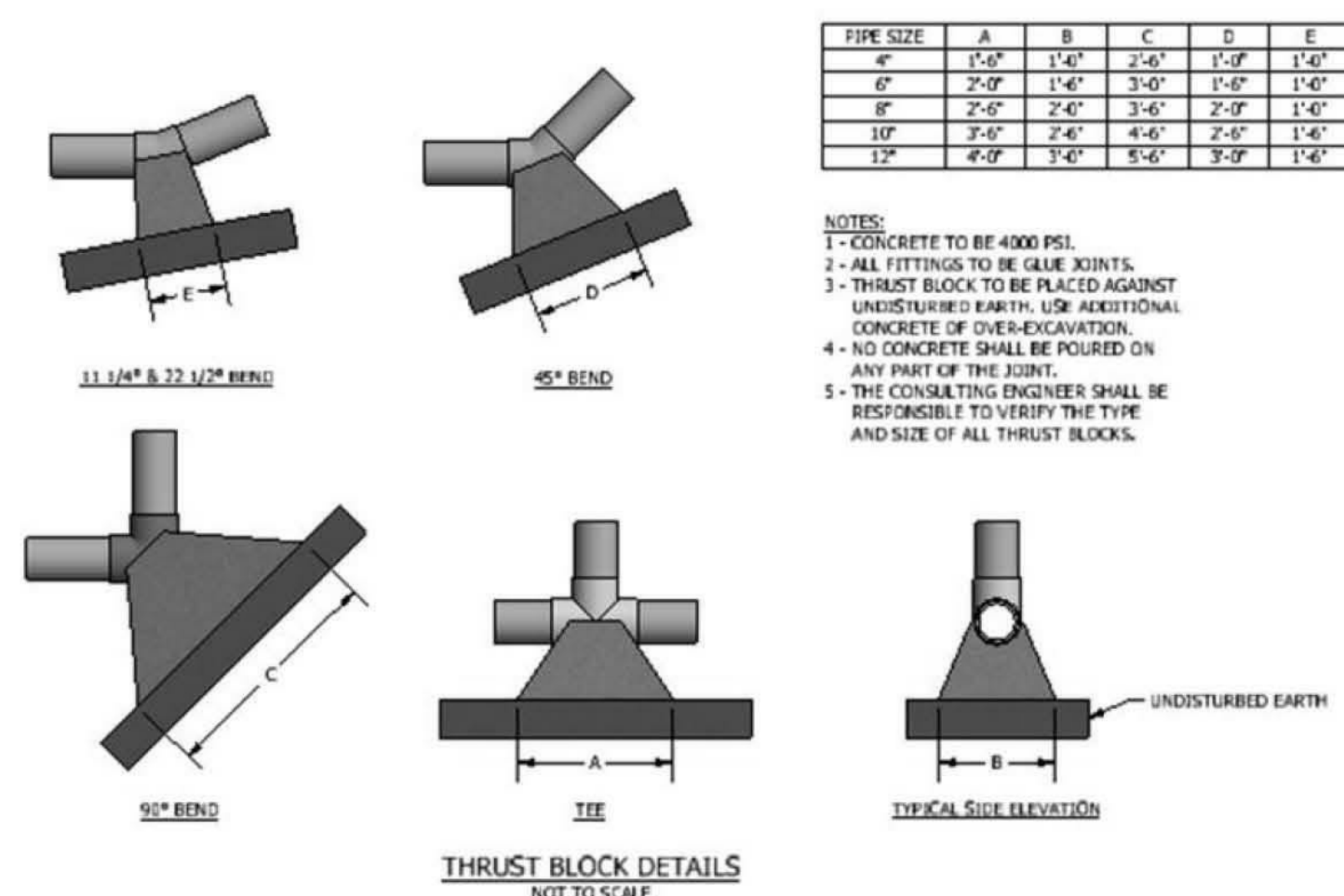
FILTRATION SYSTEM -
RESERVOIR VOLUME - 4500 GALLONS
FILTER FLOW RATE - 188.4 GPM
RESERVOIR TURNOVER TIME - 4500 MINUTES
FILTER AREA - 12.56 SQ. FT.
FILTRATION RATE - 15 GPM/SQ.FT.

PIPING SPECIFICATIONS -
DRAIN PIPING SIZED FOR 4 FPS MAXIMUM VELOCITY.
PUMP SUCTION LINES SIZED FOR 6 FPS MAXIMUM VELOCITY.
PUMP DISCHARGE LINES SIZED FOR 10 FPS MAXIMUM VELOCITY.
PLEASE ADVISE RAIN DROP IF THIS EXCEEDS LOCAL CODES OR REGULATIONS FOR YOUR AREA.

SPRAYGROUND SPECIFICATIONS -
RESERVOIR CAPACITY IS 4500 GALLONS WITH A FILTRATION CYCLE OF 4500 MINUTES AT A FLOW RATE OF 188.4 GPM. SEQUENCED FLOW RATE DESIGNED AT 1245.8 GPM. ALL PIPE WORK SHALL BE SCHEDULE 80 PVC, APPROVED FOR POTABLE WATER USAGE AND PRESSURE TESTED BEFORE PLACING CONCRETE. ALL PIPING SHALL BE LABELED WITH DIRECTIONAL ARROWS.



1 SPRAY PARK FILTRATION SYSTEM LAYOUT
SCALE: 1/4" = 1'-0" N.T.S.



2 SPRAY PARK MISC. DETAILS
SCALE: N.T.S.

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SPRAY PARK FILTRATION SYSTEM LAYOUT & MISC. DETAILS

Scale	USA Project No.
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Drawing Date	Drawing No.
09.26.17	AQ-113
Drawn By	Checked By
KAE	APA

NOTES:
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2. ANY NOTES INDICATING "TO BE SUPPLIED BY RAINDROP PRODUCTS" WILL BE PURCHASED BY CONTRACTOR AND INSTALLED BY CONTRACTOR., TYP.

PLUMBING GENERAL NOTES

GENERAL REQUIREMENTS

- A. APPLICABLE PLUMBING AND FUEL GAS CODE: NATIONAL STANDARD PLUMBING CODE 2015.
- B. BEFORE SUBMITTING A BID, CAREFULLY EXAMINE THE DRAWINGS, VISIT SITE OF PROPOSED WORK AND BECOME FULLY INFORMED OF ALL EXISTING CONDITIONS AND LIMITATIONS TO BE MET. FAILURE TO VISIT AND INSPECT THE EXISTING CONDITIONS SHALL NOT BE VALID REASON FOR AUTHORIZATION OF A CHANGE ORDER.
- C. THE DRAWINGS ARE DIAGNOSTIC AND INDICATIVE OF THE WORK AND SHALL BE FOLLOWED AS CLOSELY AS PRACTICAL. THE DRAWINGS ARE NOT INTENDED TO SHOW OR DESCRIBE EVERY SMALL CONSTRUCTION DETAIL. IT IS INTENDED THAT THE CONTRACTOR COMPLETE THE WORK IN SUCH A MANNER THAT THE VARIOUS SYSTEMS WILL FUNCTION, OPERATE, AND PERFORM TO THE TRUE INTENT AND MEANING OF THE DRAWINGS AND COMPLY WITH ALL APPLICABLE BUILDING CODES AND INDUSTRY STANDARDS.
- D. ALL WORK SHALL CONFORM TO ALL PERTINENT LAWS, ORDINANCES, CODES, AND REGULATIONS. EQUIPMENT SHALL BE INSTALLED IN THE STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
- E. UNLESS OTHERWISE INDICATED, ALL CUTTING AND PATCHING REQUIRED FOR THE INSTALLATION OR REMOVAL OF THE PLUMBING WORK IS BY THIS CONTRACTOR. ALL PATCHING SHALL BE RESTORED TO ORIGINAL CONDITIONS. DO NOT CUT STRUCTURAL MEMBERS.
- F. UNCONDITIONALLY GUARANTEE IN WRITING ALL MATERIALS, EQUIPMENT, AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE BY OWNER.
- G. MAINTAIN A CLEAN AND SAFE WORK AREA AT ALL TIMES. ALL SAFETY PROCEDURES AND ENFORCEMENT IS THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL MEET ALL OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION STANDARDS.

INSTALLATION REQUIREMENTS

- A. INSTALL PIPE SLEEVES IN WALLS AND FLOORS WHERE PIPES PENETRATE. PROVIDE ALL NECESSARY HANGERS, SUPPORTS, AND ANCHORS FOR ALL PIPING AND EQUIPMENT.
- B. DO NOT LOCATE ANY ITEMS REQUIRING ACCESS IN AN INACCESSIBLE LOCATION UNLESS AN APPROVED ACCESS DOOR IS PROVIDED.
- C. ALL PIPING SHALL BE CONCEALED IN WALLS, CEILING SPACE, OR SOFFITS. COORDINATE WORK WITH ALL TRADES. DO NOT RUN WATER PIPES IN UNHEATED SPACES.
- D. INTERIOR COLD AND HOT WATER DISTRIBUTION PIPING WITHIN THE BUILDING SHALL BE TYPE 'L' COPPER, ASTM SPEC. B-88-81 WITH A 150 PSI WORKING PRESSURE. FITTINGS SHALL BE WROUGHT COPPER OF WEIGHT CORRESPONDING TO PIPE TO WHICH THEY ARE ATTACHED. JOINTS SHALL BE SOLDERED USING LEAD-FREE SOLDER. EXTERIOR AND/OR UNDERGROUND PIPING 3" AND LARGER SHALL BE CLASS 52 DUCTILE IRON. FITTINGS SHALL BE OF WEIGHT CORRESPONDING TO PIPE TO WHICH THEY ARE ATTACHED. AFTER ALL PIPING HAS BEEN INSTALLED, BUT BEFORE ANY EQUIPMENT OR FIXTURES HAVE BEEN CONNECTED, THE SYSTEM SHALL BE FILLED WITH MINIMUM PRESSURE OF 150 POUNDS PER SQUARE INCH. THE PRESSURE SHALL BE MAINTAINED FOR A PERIOD OF 60 MINUTES. AFTER SUCCESSFUL TESTING, FLUSH ALL PIPING TO REMOVE DIRT AND FOREIGN MATTER, THEN STERILIZE THE WATER SYSTEM WITH A CHLORINE OR ITH SOLUTION. FLUSH WATER PIPES WITH FRESH WATER TO REMOVE CHLORINE SOLUTION. STERILIZATION SHALL BE PERFORMED IN ACCORDANCE WITH ANWA SPECIFICATIONS C601-537.
- E. EXTERIOR AND/OR UNDERGROUND PIPING 2" AND SMALLER SHALL BE TYPE 'K' COPPER. FITTINGS SHALL BE WROUGHT COPPER OF WEIGHT CORRESPONDING TO PIPE TO WHICH THEY ARE ATTACHED. JOINTS SHALL BE SOLDERED USING LEAD-FREE SOLDER. EXTERIOR AND/OR UNDERGROUND PIPING 3" AND LARGER SHALL BE CLASS 52 DUCTILE IRON. FITTINGS SHALL BE OF WEIGHT CORRESPONDING TO PIPE TO WHICH THEY ARE ATTACHED. AFTER ALL PIPING HAS BEEN INSTALLED, BUT BEFORE ANY EQUIPMENT OR FIXTURES HAVE BEEN CONNECTED, THE SYSTEM SHALL BE FILLED WITH MINIMUM PRESSURE OF 150 POUNDS PER SQUARE INCH. THE PRESSURE SHALL BE MAINTAINED FOR A PERIOD OF 60 MINUTES. AFTER SUCCESSFUL TESTING, FLUSH ALL PIPING TO REMOVE DIRT AND FOREIGN MATTER, THEN STERILIZE THE WATER SYSTEM WITH A CHLORINE OR ITH SOLUTION. FLUSH WATER PIPES WITH FRESH WATER TO REMOVE CHLORINE SOLUTION. STERILIZATION SHALL BE PERFORMED IN ACCORDANCE WITH ANWA SPECIFICATIONS C601-537.
- F. PROVIDE ALL LABOR, RIGGING, TRUCKING, AND DISPOSITION OF ALL EQUIPMENT AND MATERIAL MADE OBSOLETE BY THE RENOVATIONS. ALL EQUIPMENT AND MATERIAL REMOVED BY THIS CONTRACTOR SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND/OR SHALL BE TAKEN TO AN APPROVED LANDFILL.
- G. ALL SANITARY AND VENT PIPING ABOVE AND BELOW THE GROUND SHALL BE SCH. 40 DWV PVC PLASTIC PIPE WITH SOLVENT WELD JOINTS AND FITTINGS (OV CELLULAR FOAM CORE PIPE SHALL NOT BE PERMITTED) OR SERVICE WEIGHT CAST IRON OR NO-HUB CAST IRON. MAKE ALL JOINTS WATERTIGHT AND GASTIGHT. WHEN ROUGHING WORK IS COMPLETED AND BEFORE CONNECTION OF FIXTURES OR DRAINS, THE SYSTEM SHALL BE SUBJECTED TO A WATER TEST BY PLUGGING UP ALL OPENINGS AND FILLING ALL OF THE LINES TO THE ROOF LEVEL. ANY DEFECTS SHALL BE CORRECTED.
- H. ALL SANITARY AND VENT PIPING IN RETURN AIR PLENUM CEILINGS, AND THROUGH FIRE RATED ASSEMBLIES SHALL BE SERVICE WEIGHT CAST IRON OR NO-HUB CAST IRON. ALL RAIN WATER PIPING BEING HEAT TRACED SHALL BE SERVICE WEIGHT CAST IRON OR NO-HUB CAST IRON.
- I. IDENTIFY ALL DOMESTIC COLD WATER, AND DOMESTIC HOT WATER PIPING WITH COLORED, WATERPROOF, ALL TEMPERATURE, SELF-ADHERING LABELS AND DIRECTIONAL ARROWS AS MANUFACTURED BY SETON.
- J. PROVIDE SHOCK ABSORBING DEVICES WHICH WILL PROTECT WATER SUPPLY PIPING FROM WATER HAMMER. SEALED AIR CHAMBER METAL BELLOWS TYPE SHALL BE JAY R. SMITH COMPANY "HYDROTROL". LOCATE AT THE ENDS OF ALL BRANCH PIPING RUNS.
- K. INSULATE ALL DOMESTIC HOT, HOT RECIRCULATION, AND COLD WATER PIPING AND ALL FITTINGS AND VALVES. PIPE INSULATION SHALL BE RIGID FIBERGLASS WITH WHITE KRAFT BONDED TO ALUMINUM FOIL, K = 0.23 @ 75 F., REINFORCED WITH FIBERGLASS YARN, SUITABLE FOR PAINTING, MANVILLE MICRO-LOW 650 WITH AP-1 JACKET OR APPROVED EQUAL. FITTINGS AND VALVES SHALL BE INSULATED WITH MOLDED ONE-PIECE P.V.C. COVERS WITH FIBERGLASS INSULATION, MANVILLE "ZESTON 25/50" OR EQUAL.
- L. SUBMIT COPIES OF DETAILED SHOP DRAWING DATA FOR EACH PIECE OF EQUIPMENT OR MATERIAL PROPOSED TO BE USED FOR REVIEW BY THE ENGINEER.
- M. AT THE COMPLETION OF WORK, CONTRACTOR SHALL PROVIDE THE OWNER WITH AN INSTRUCTION TO EMPLOYEES FOR EACH SYSTEM INSTALLED AND THE OPERATION OF ALL EQUIPMENT.
- N. DO NOT INSTALL PIPING OR ANY OTHER PLUMBING EQUIPMENT OVER ELECTRICAL PANELS.

ABBREVIATIONS	PLUMBING FIXTURES	PIPING LEGEND
<p>AFB ABOVE FINISHED FLOOR</p> <p>AFG ABOVE FINISHED GRADE</p> <p>AP ACCESS PANEL</p> <p>BOF BOTTOM OF FOOTING</p> <p>ECO CLEANOUT</p> <p>CW COLD WATER</p> <p>DIA DIAMETER</p> <p>DF DRINKING FOUNTAIN</p> <p>DFU DRAINAGE FIXTURE UNIT</p> <p>DMW DOMESTIC WELL WATER</p> <p>EC ELECTRICAL CONTRACTOR</p> <p>ETR EXISTING TO REMAIN</p> <p>EX EXISTING</p> <p>EXIST. EXISTING</p> <p>FA FRESH AIR INTAKE</p> <p>FD FINISHED FLOOR ELEVATION</p> <p>FF CEILING</p> <p>GC GENERAL CONTRACTOR</p> <p>HW HOT WATER</p> <p>HWR HOT WATER RETURN</p> <p>INV INVERT OF PIPE</p> <p>INV ELEV. INVERT ELEVATION</p> <p>MC MECHANICAL CONTRACTOR</p> <p>MIN MINIMUM</p> <p>MV MIXING VALVE</p> <p>NC NORMALLY CLOSED</p> <p>NIC NOT IN THIS CONTRACT</p> <p>N.O. NORMALLY OPEN</p> <p>NTS NOT TO SCALE</p> <p>OD OUTSIDE DIAMETER</p> <p>OS&Y OUTSIDE SCREW & YOKE GATE VALVE</p> <p>PC PLUMBING CONTRACTOR</p> <p>PSI POUNDS PER SQUARE INCH (GAUGE)</p> <p>SAN SANITARY</p> <p>SO FT SQUARE FOOT</p> <p>TYP TYPICAL</p> <p>UR URINAL</p> <p>V VENT</p> <p>VB VACUUM BREAKER</p> <p>VTR VENT THROUGH ROOF</p> <p>W WATER</p> <p>WC WATER CLOSET</p> <p>WH WALL HYDRANT</p> <p>WFU WATER SUPPLY FIXTURE UNIT</p>	<p>BFP REDUCED PRESSURE BACKFLOW PREVENTER</p> <p>CO CLEAN OUT</p> <p>DF DRINKING FOUNTAIN</p> <p>ECO EXTERIOR CLEAN OUT</p> <p>EW/EW SH. ELECTRIC WATER HEATER</p> <p>FCO FLOOR CLEAN OUT</p> <p>FD FLOOR DRAIN</p> <p>FFD FUNNELED FLOOR DRAIN</p> <p>GPR GAS PRESSURE REGULATOR</p> <p>GSV GAS SOLENOID VALVE</p> <p>HB HOSE BIBB</p> <p>HEC HANDICAP ELECTRIC WATER COOLER</p> <p>HLAV HANDICAP LAVATORY</p> <p>HUR HANDICAP URINAL</p> <p>HWC HANDICAP WATER CLOSET</p> <p>LAV LAVATORY</p> <p>MS MOP SINK</p> <p>SS SERVICE SINK</p> <p>UR URINAL</p> <p>WC WATER CLOSET</p> <p>WCO WALL CLEAN OUT</p> <p>WH WALL HYDRANT</p> <p>WHA WATER HAMMER ARRESTER</p>	<p>BACKFLOW VALVE</p> <p>BALANCING VALVE</p> <p>BALL VALVE</p> <p>BUTTERFLY VALVE</p> <p>CHECK VALVE</p> <p>DOMESTIC COLD WATER</p> <p>ELBOW</p> <p>GAS</p> <p>GAS-LOW PRESSURE</p> <p>GAS VALVE</p> <p>GATE VALVE</p> <p>HOT WATER (120°F)</p> <p>HOT WATER RETURN (120°F)</p> <p>HOT WATER (140°F)</p> <p>MIXING VALVE</p> <p>OS & Y VALVE</p> <p>PIPE CAP</p> <p>PIPE RISE</p> <p>PIPE DROP</p> <p>PRESSURE TEMPERATURE RELIEF VALVE</p> <p>STORM WATER DRAIN BELOW SLAB/FLOOR</p> <p>SANITARY ABOVE SLAB/FLOOR</p> <p>SANITARY BELOW SLAB/FLOOR</p> <p>STRAINER</p> <p>TEE</p> <p>THERMOMETER</p> <p>UNION</p> <p>VENT</p> <p>WATER HAMMER ARRESTER</p> <p>WATER METER</p>
<p>EQUIPMENT</p> <p>AR-TO-AIR HEAT EXCHANGER</p> <p>EXHAUST FAN</p> <p>RELIEF HOOD</p> <p>UNIT HEATER</p>	<p>MISCELLANEOUS</p> <p>ACCESS PANEL</p> <p>CONNECT NEW TO EXISTING</p> <p>DRAWING NOTE INDICATOR</p> <p>ELECTRICAL PANEL BY EC</p> <p>EXISTING TO BE REMOVED</p> <p>EXISTING ABOVE SLAB/FLOOR TO REMAIN</p> <p>EXISTING BELOW SLAB/FLOOR TO REMAIN</p> <p>DETAIL #</p> <p>DRAWING #</p> <p>NOTE: ABBREVIATION AND SYMBOL LISTING IS FOR REFERENCE ONLY; NOT ALL SYMBOLS MAY BE SHOWN AND/OR USED ON THESE DRAWINGS.</p>	

MATERIAL	PIPE SIZE	HORIZONTAL SPACING IN FEET	VERTICAL SPACING IN FEET	REMARKS
TYPE 'L' COPPER PIPE OR TUBING	1 1/4" AND SMALLER	6'	10'	MIDSTORY GUIDE
TYPE 'L' COPPER PIPE OR TUBING	1 1/2" AND LARGER	10'	10'	MIDSTORY GUIDE
PVC SCHEDULE 40 PIPE	ALL	4'	10'	MIDSTORY GUIDE
CAST-IRON PIPE	ALL	5'	15'	MAXIMUM HORIZONTAL SPACING OF CAST-IRON HANGERS SHALL BE INCREASED TO 10' WHERE 10 FOOT LENGTHS OF PIPE ARE INSTALLED
STEEL PIPE	1/2"	6'	EVERY FLOOR LEVEL	
STEEL PIPE	3/4" AND 1"	8'	EVERY FLOOR LEVEL	
STEEL PIPE	1-1/4" AND LARGER	10'	EVERY FLOOR LEVEL	

SIZE OF TRAP ARM (INCHES)	LENGTH - TRAP ARM TO VENT	SLOPE - INCHES PER FOOT
1-1/4	3'-6"	1/4
1-1/2	5'	1/4
2	8'	1/4
3	10'	1/8
4	12'	1/8

FIXTURE	MANUFACTURER	TYPE	MODEL	TRIM NO.	SUPPORT NO.	MINIMUM PIPE SIZES			WSE/US			DFU'S	FLOW RATE	MOUNTING HEIGHTS	ELECTRICAL REQUIREMENTS	REMARKS	FIXTURE SPECIFIC NOTES			
						TRAP	WASTE	VENT	TRAP	WASTE	VENT									
HWC	AMERICAN STANDARD	AFWALL	2257.103	SLOAN ROYAL 111	JR SMITH	4"	2"	1"	8.0	8.0	6.0	1.6	GPF	RIM AT 17" AFF	SEAT: BEMIS 1955-C ELONGATED; MANUAL FLUSHOMETER VALVE, CAULK TO WALL.	SEE NOTE A				
WC1	AMERICAN STANDARD	AFWALL	2257.103	SLOAN ROYAL 111	JR SMITH	4"	2"	1"	8.0	8.0	6.0	1.6	GPF	RIM AT 15" AFF	SEAT: BEMIS 1955-C ELONGATED; MANUAL FLUSHOMETER VALVE, CAULK TO WALL.	SEE NOTE B				
UR	AMERICAN STANDARD	WASHBROOK FLOWISE	6590.001	SLOAN SOLIS 8186-HEU	JR SMITH	2"	1 1/2"	3/4"	4.0	4.0	4.0	0.125	GPF	RIM AT 17" AFF	EXPOSED TOP SPUD HIGH EFFICIENCY UNIVERSAL URINAL WITH EXPOSED SOLAR POWERED FLUSHOMETER VALVE, CAULK TO WALL.					
HUR	AMERICAN STANDARD	WASHBROOK FLOWISE	6590.001	SLOAN SOLIS 8186-HEU	JR SMITH	2"	1 1/2"	3/4"	4.0	4.0	4.0	0.125	GPF	RIM AT 24" AFF	EXPOSED TOP SPUD HIGH EFFICIENCY UNIVERSAL URINAL WITH EXPOSED SOLAR POWERED FLUSHOMETER VALVE, CAULK TO WALL.					
HLAV	BRADLEY EXPRESS	MG-3 LAV-SYSTEM	3 STATION	INFRARED SENSOR	WALL BRACKET	1-1/2"	1-1/2"	1-1/4"	1/2"	1/2"	1.5	1.1	1.1	2.0	0.5	GPM	RIM AT 34" AFF	120V GFI	MG-3-IR-LSD-3-TMA, EXPRESS LAVATORY SYSTEM 3-STATION INFRARED CONTROL, OFF-FLOOR WALL OUTLET WITH LIQUID SOAP DISPENSER AND THERMOSTATIC MIXING ASSEMBLY. CAULK TO WALL.	SEE NOTE C
LAV	BRADLEY EXPRESS	MG-3 LAV-SYSTEM	3 STATION	INFRARED SENSOR	WALL BRACKET	1-1/2"	1-1/2"	1-1/4"	1/2"	1/2"	1.5	1.1	1.1	2.0	0.5	GPM	RIM AT 32" AFF	120V GFI	MG-3-IR-LSD-3-TMA, EXPRESS LAVATORY SYSTEM 3-STATION INFRARED CONTROL, OFF-FLOOR WALL OUTLET WITH LIQUID SOAP DISPENSER AND THERMOSTATIC MIXING ASSEMBLY. CAULK TO WALL.	SEE NOTE C
HS	ELKAY	LUSTERTONE 3-HOLE ADA	LRAD2219	SINGLE BOWL	COUNTERTOP	1 1/2"	1 1/2"	1 1/4"	1/2"	1/2"	1.5	1.1	1.1	2.0	2.2	GPM	COUNTERTOP	5-1/2" BOWL DEPTH OFF-CENTERED REAR DRAIN, POWERS MIXING VALVE LF1M495-2 AND MCGUIRE MODEL 151M STRAINER AND TAILPIECE, CAULK TO COUNTERTOP	SEE NOTE F	
MS	FIAT	TERRAZZO MOP SINK	TSB-3003	36"X24"X12"	FLOOR	3"	3"	2"	3/4"	3/4"	3.0	2.3	2.3	3.0	2.5	GPM	MOUNT FAUCET 36" AFF	6" DROP FRONT STANDARD STEEL THRESHOLD, WITH VACUUM BREAKER FAUCET	SEE NOTE D	
WHA-	JR SMITH	WATER HAMMER ARRESTER	5000 SERIES												PROVIDE WITH VACUUM BREAKER, LENGTH BASED ON WALL THICKNESS TO WARM SIDE OF INSULATION, ADD ADDITIONAL 2" TO LENGTH FOR WALL CLAMP					
WH	JR SMITH	FREEZE PROOF WALL HYDRANT	5509-WC	RECESSED BOX WITH LOCK				3/4"	2.5	2.5			2.5	GPM	MOUNT AT 30" AFG	PROVIDE WITH VACUUM BREAKER				
HB	WOODFORD	HOSE BIBB	24P	LOOSE TEE KEY HANDLE				1/2"	2.5	2.5										
FD1	JR SMITH	FLOOR DRAIN	2005Y-B-NB		FLOOR	3"	3"	1-1/2"					0.0		CAST IRON BODY, ROUND NICKEL BRONZE ADJUSTABLE STRAINER WITH 4" DEEP TRAP SEAL.	SEE NOTE E				
FD2	JR SMITH	FLOOR DRAIN	2005Y-B-F37-NB		FLOOR	4"	4"	2"					6.0		CAST IRON BODY, ROUND NICKEL BRONZE ADJUSTABLE STRAINER WITH SEDIMENT BUCKET, WITH 4" DEEP TRAP SEAL.	SEE NOTE E				
FD3	JR SMITH	FLOOR SINK	341C		FLOOR	4"	4"	2"					6.0		CAST IRON BODY, ACID RESISTANT INTERIOR, NICKEL BRONZE RIM AND 1/2 GRATE WITH 6" SLUMP DEPTH AND SEDIMENT BUCKET.					
FCO	JR SMITH	FLOOR CLEANOUT	4031		FLOOR										PIPE SIZE PER PLAN, INSTALL LEVEL AND FLUSH WITH FINISHED FLOOR					
ECO	JR SMITH	EXTERIOR CLEANOUT	4231-M												PIPE SIZE PER PLAN, INSTALL LEVEL AND FLUSH WITH CONCRETE					
WCO	JR SMITH	WALL CLEANOUT	4720-NB		WALL										PIPE SIZE PER PLAN					
EWB	BRADFORD WHITE	ELECTRIC WATER HEATER	E32-50S-3					1-1/4"	1-1/4"						SEE REMARKS	208V/3PH/12KW 3) 4000 WATT ELEMENTS, 50 GAL. CAP., 50 GPH @ 100°F TEMP RISE. EQUIPPED WITH FACTORY SUPPLIED T&P RELIEF VALVE, SHIPPING WEIGHT=137 LBS.				
EW2	EEMAX	TANKLESS WATER HEATER	SP4208		WALL			3/8"	3/8"						SEE REMARKS	208V/1PH/14.1KW/19.7 AMPS, 56°F RISE @ 0.5 GPM FLOW. LOCATE TANKLESS WATER HEATER BELOW HAND SINK.				
BFP	WATTS	RED. PRESSURE BACK. PREVENTER	LF090T ASSE. 1013					1"							WITH 90BACC AIR GAP DRAIN PIPED INDIRECT TO FLOOR DRAIN (FD2), PIPE SIZE AS PER PLAN.					

- GENERAL NOTES:**
- ALL CHINA FIXTURES TO BE SUPPLIED WHITE.
 - ALL EXPOSED PIPING TO BE CHROME PLATED.
 - PROVIDE STOP VALVES AT EACH FIXTURE.
 - ADJUST ALL SELF-CLOSING FAUCETS FOR 10 SECOND RUN TIME.
 - FURNISH ALL LAVATORIES WITH CHROME PLATED METAL GRID STRAINER AND TAILPIECE.
 - EXPOSED R-TRAPS FOR LAWS TO BE 1 1/4" X 1 1/2" 17 GAUGE CHROME PLATED WITH CLEANOUTS.
 - ALTERNATE MANUFACTURERS KOHLER, CRANE, WADE, AND ZURN.

- FIXTURE SPECIFIC NOTES:**
- PROVIDE WITH FLUSH HANDLE ON ACCESS SIDE OF FIXTURE.
 - AMBULATORY ACCESSIBLE WATER CLOSET.
 - COLOR AS SELECTED BY THE OWNER.
 - FURNISHED SERVICE SINK MOP BASIN WITH STAINLESS STEEL CURB CAPS, HOSE BRACKET #832-AA, MOP HANGER #889-CC, STAINLESS STEEL WALL GUARDS CAULKED WITH #933-AA.
 - PROVIDE WITH PROSET SYSTEMS TRAP GUARD INSERT FITTING WHERE INDICATED ON DRAWINGS. COORDINATE EXACT SIZE WITH MANUFACTURERS REPRESENTATIVE.
 - PROVIDE "TRUEBRO" PREFORMED LAV-SHIELD LAVATORY PROTECTIVE ENCLOSURE, WHITE IN COLOR UNDER SINK.



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GENERAL NOTES & SYMBOL LIST

Scale As indicated USA Project No. 2014-110
Drawing Date 09.26.17 Drawing No.
Drawn By EBN designed by EBN checked by KRZ
Checked By KRZ P-001

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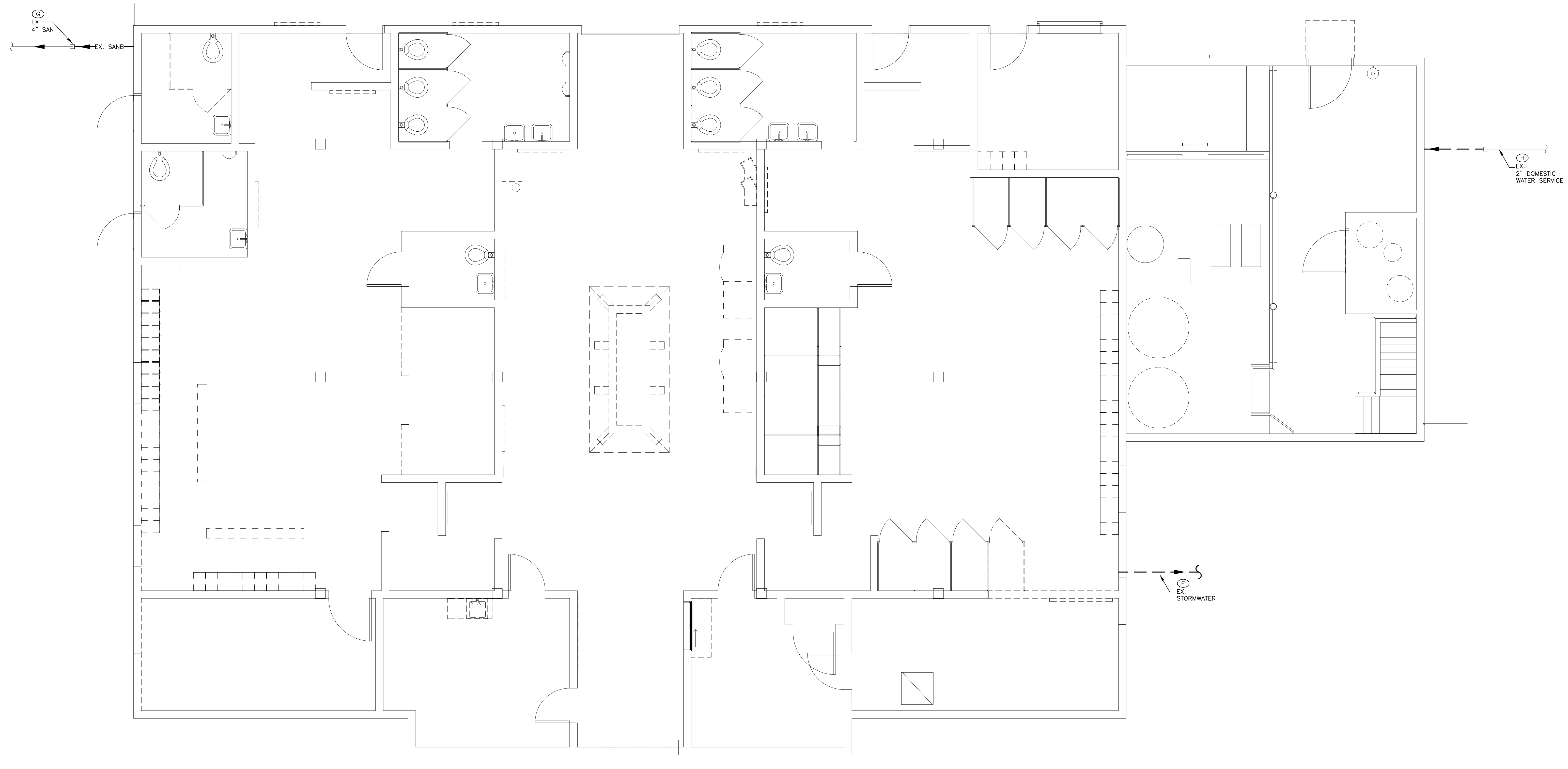
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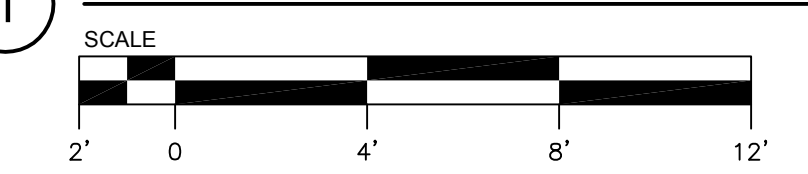
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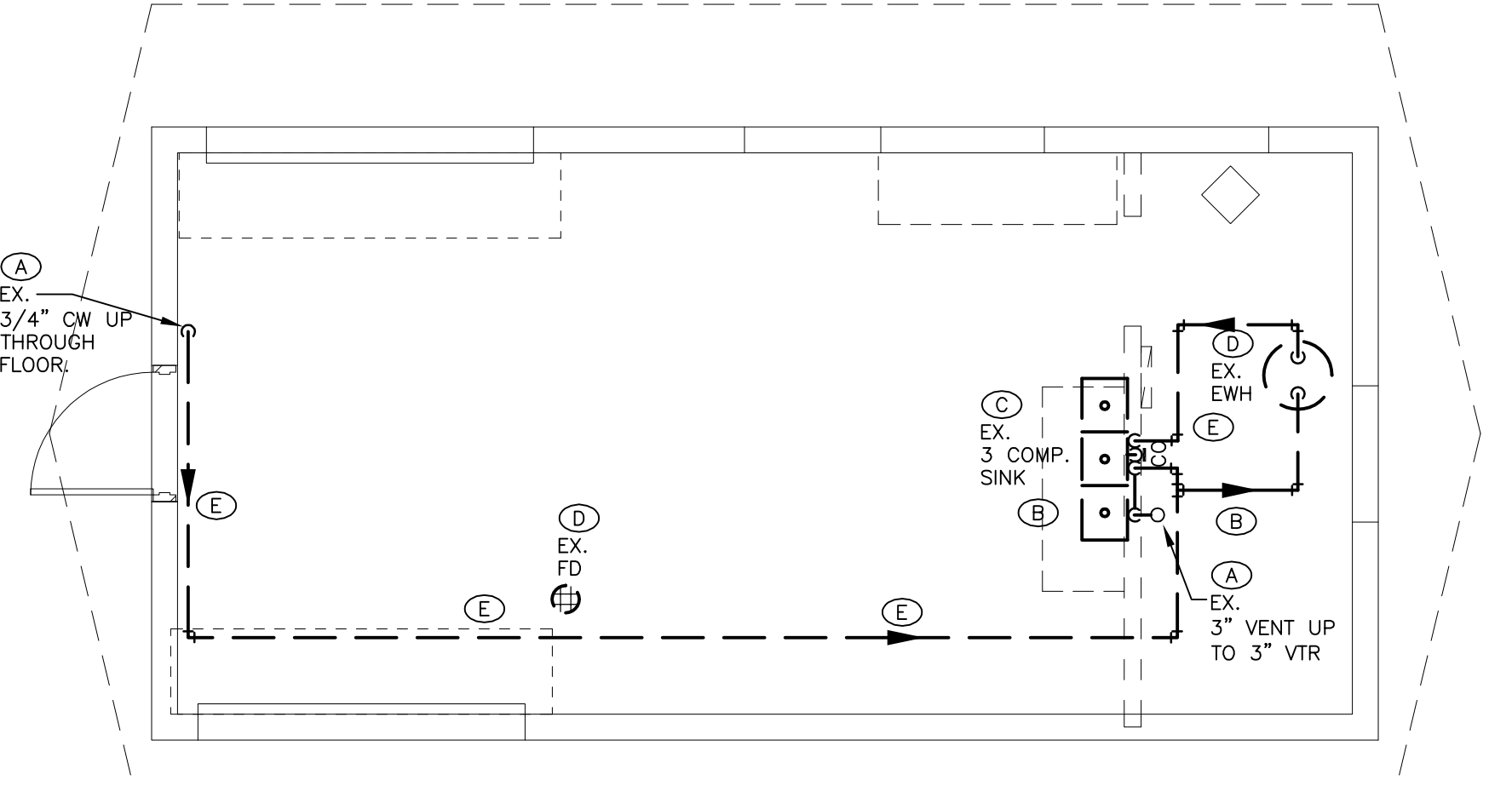
NOTE: EXISTING BUILDING WILL BE DEMOLISHED IN ITS ENTIRETY.

1 POOL BUILDING DEMOLITION PLAN - PLUMBING

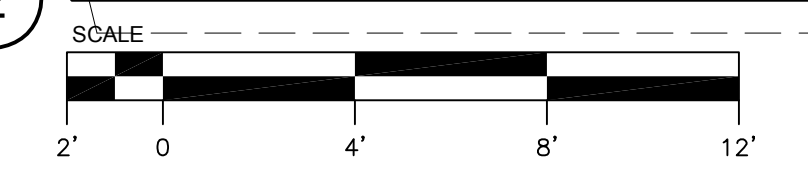


DRAWING NOTES BY SYMBOL - DEMOLITION

- (A) EXISTING TO REMAIN.
- (B) THE LOCATION OF THE UNDER SLAB SANITARY AND STORM PIPING, SHOWN ON THIS DRAWING, IS BASED ON ASSUMPTIONS. AS-BUILT DRAWINGS WERE NOT AVAILABLE, NOR COULD ANY INFORMATION ABOUT THE UNDER SLAB PIPING BE FOUND. THE EXACT LOCATION, DEPTH, AND SIZES OF THE UNDER SLAB PIPING IS NOT KNOWN. PRIOR TO SAW CUTTING THE CONCRETE FLOOR AND EXCAVATING TO PERFORM ANY WORK ON THE SANITARY PIPING, THIS CONTRACTOR SHALL USE AN ELECTRONIC SENSOR AND RECEIVER TO DETERMINE THE APPROXIMATE LOCATION OF THE UNDER SLAB PIPING.
- (C) DISCONNECT AND REMOVE EXISTING PLUMBING FIXTURES. REMOVE ALL RELATED SANITARY, VENT AND DOMESTIC WATER PIPING. OPEN WALL, SAW CUT CONCRETE SLAB AND EXCAVATE AS REQUIRED TO ACCESS THE PIPING IN THE WALL AND BELOW SLAB SANITARY PIPING. DISCONNECT AND REMOVE PIPING MADE OBSOLETE BY THE RENOVATION. PIPING IN WALLS NOT BEING DEMOLISHED MAY BE ABANDONED IN PLACE IF CAPPED AT BOTH ENDS. PATCH WALL, BACK FILL, COMPACT AND REPOUR THE CONCRETE SLAB FLOOR TO RECEIVE NEW FLOOR FINISH.
- (D) DISCONNECT AND REMOVE EXISTING ELECTRIC WATER HEATER MADE OBSOLETE BY THE RENOVATIONS. EXISTING POWER WIRING TO BE REMOVED BY EC. COORDINATE WORK WITH EC. CAP PIPING BACK TO MAINS IN CEILING SPACE.
- (E) DISCONNECT AND REMOVE EXISTING ABOVE SLAB DOMESTIC WATER PIPING AS INDICATED ON FLOOR PLAN.
- (F) DISCONNECT AND REMOVE STORM WATER PIPING BACK TO MAIN AND CAP.
- (G) DISCONNECT AND REMOVE EXISTING 4" SANITARY LATERAL APPROXIMATELY 5'-0" OUTSIDE OF NEW BUILDING FOOTPRINT AND TEMPORARILY CAP.
- (H) TURN OFF CURB VALVE, DISCONNECT AND REMOVE EXISTING 2" DOMESTIC WATER SERVICE APPROXIMATELY 5'-0" OUTSIDE OF NEW BUILDING FOOTPRINT AND TEMPORARILY CAP.



2 EXISTING FOOD SERVICE BUILDING DEMOLITION PLAN - PLUMBING



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POOL BUILDING AND LIFEGUARD HOUSE DEMOLITION PLANS - PLUMBING		
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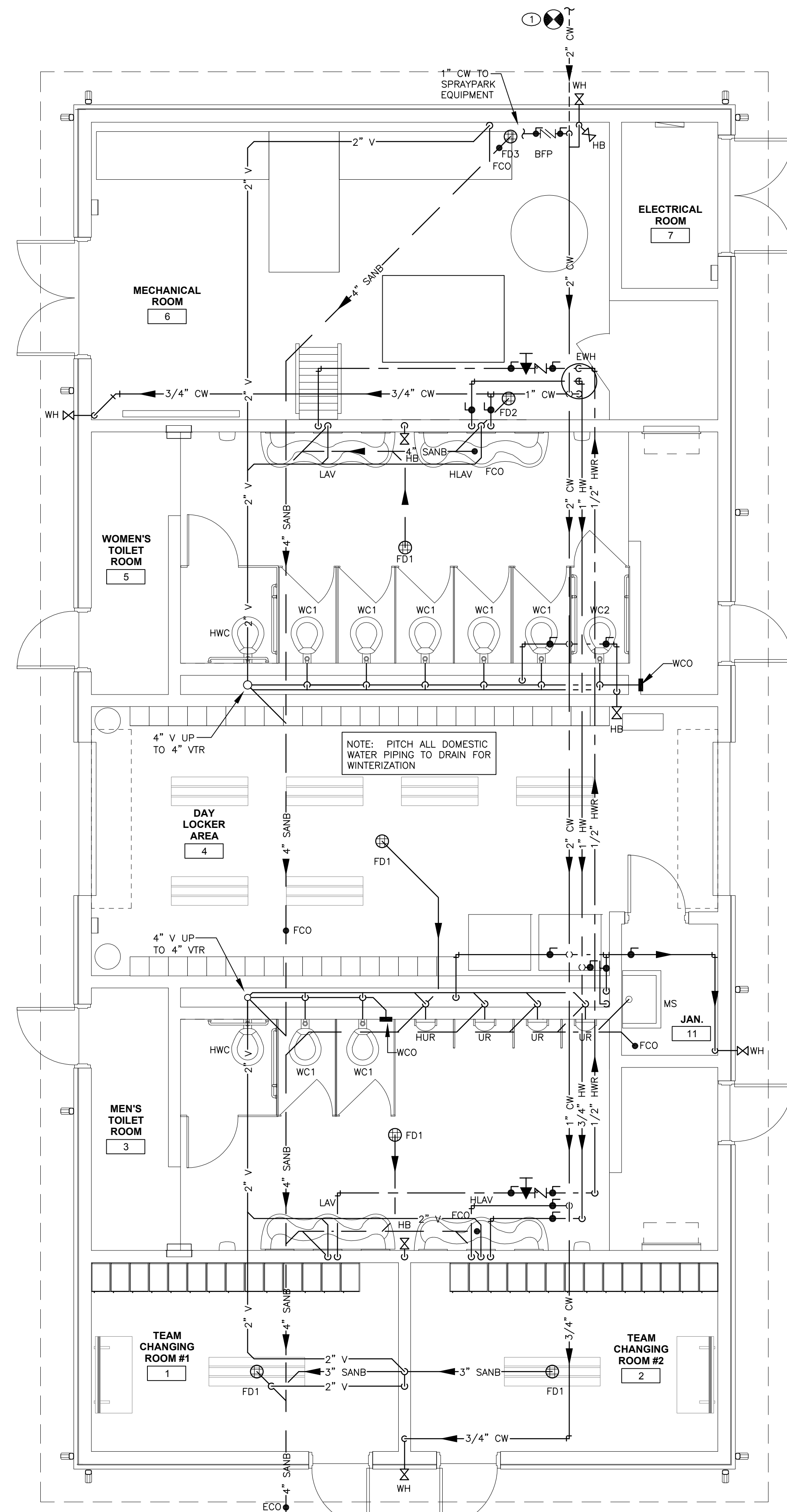


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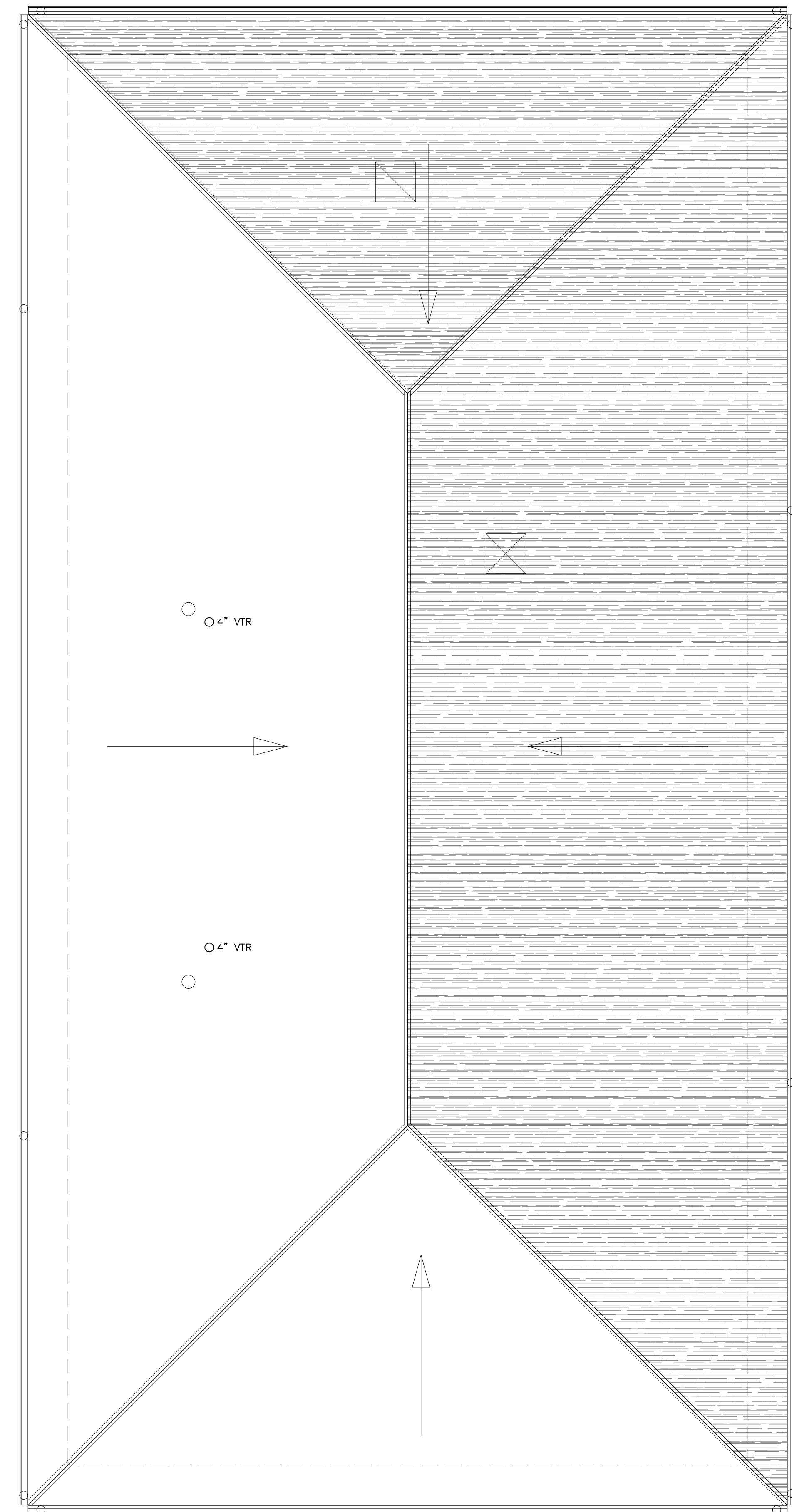
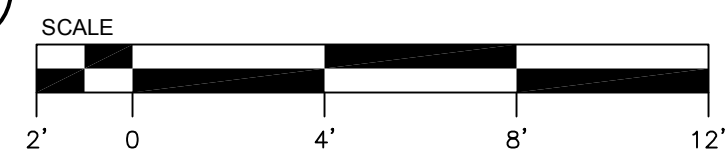
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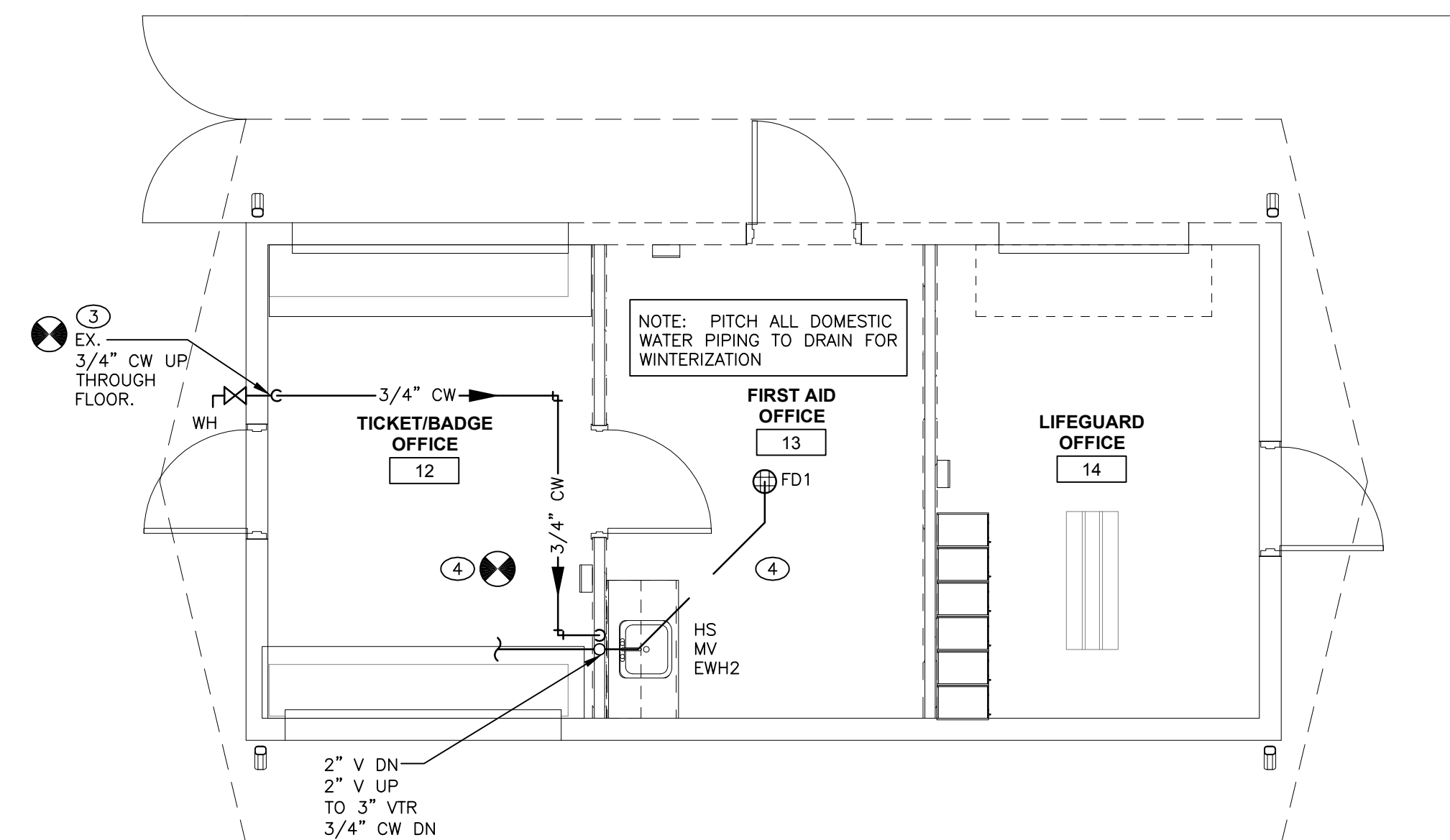
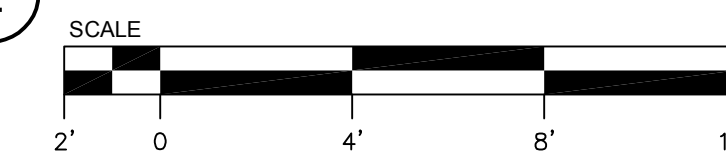
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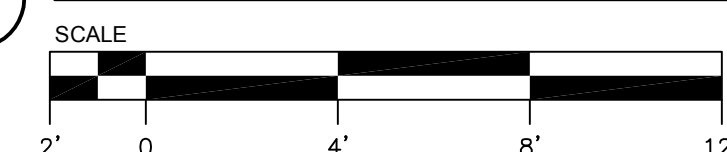
1 FLOOR PLAN - PLUMBING



2 ROOF PLAN - PLUMBING



3 LIFEGUARD PLAN - PLUMBING



DRAWING NOTES BY SYMBOL - NEW WORK

- EXCAVATE AS REQUIRED TO EXTEND AND CONNECT NEW 2" CW TO EXISTING 2" CW LEFT FROM DEMOLITION PHASE AND EXTEND AS INDICATED ON PLANS.
- EXCAVATE AS REQUIRED TO EXTEND AND CONNECT NEW 4" SANITARY TO EXISTING OF SAME SIZE OR LARGER. BACK FILL AND COMPACT TO EXISTING GRADE ELEVATION. IN PAVED AREAS PATCH TO MATCH ADJOINING SURFACE.
- CONNECT NEW 3/4" CW TO EXISTING LEFT FROM DEMOLITION PHASE AND EXTEND AS INDICATED ON PLANS. PROVIDE WITH FULL PORT BALL VALVE AND 3/4" DRAIN TEE WITH DRAIN VALVE FOR WINTERIZATION AT POINT OF CONNECTION TO EXISTING.
- SAW CUT CONCRETE FLOOR AND EXCAVATE AS REQUIRED TO INSTALL NEW UNDER SLAB 2" SANITARY CONNECTING TO EXISTING OF SAME SIZE OR LARGER. AFTER NEW PIPING HAS BEEN INSTALLED AND INSPECTED, BACK FILL, COMPACT AND REPOUR CONCRETE FLOOR TO RECEIVE NEW FINISH.



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FLOOR & ROOF PLAN - PLUMBING

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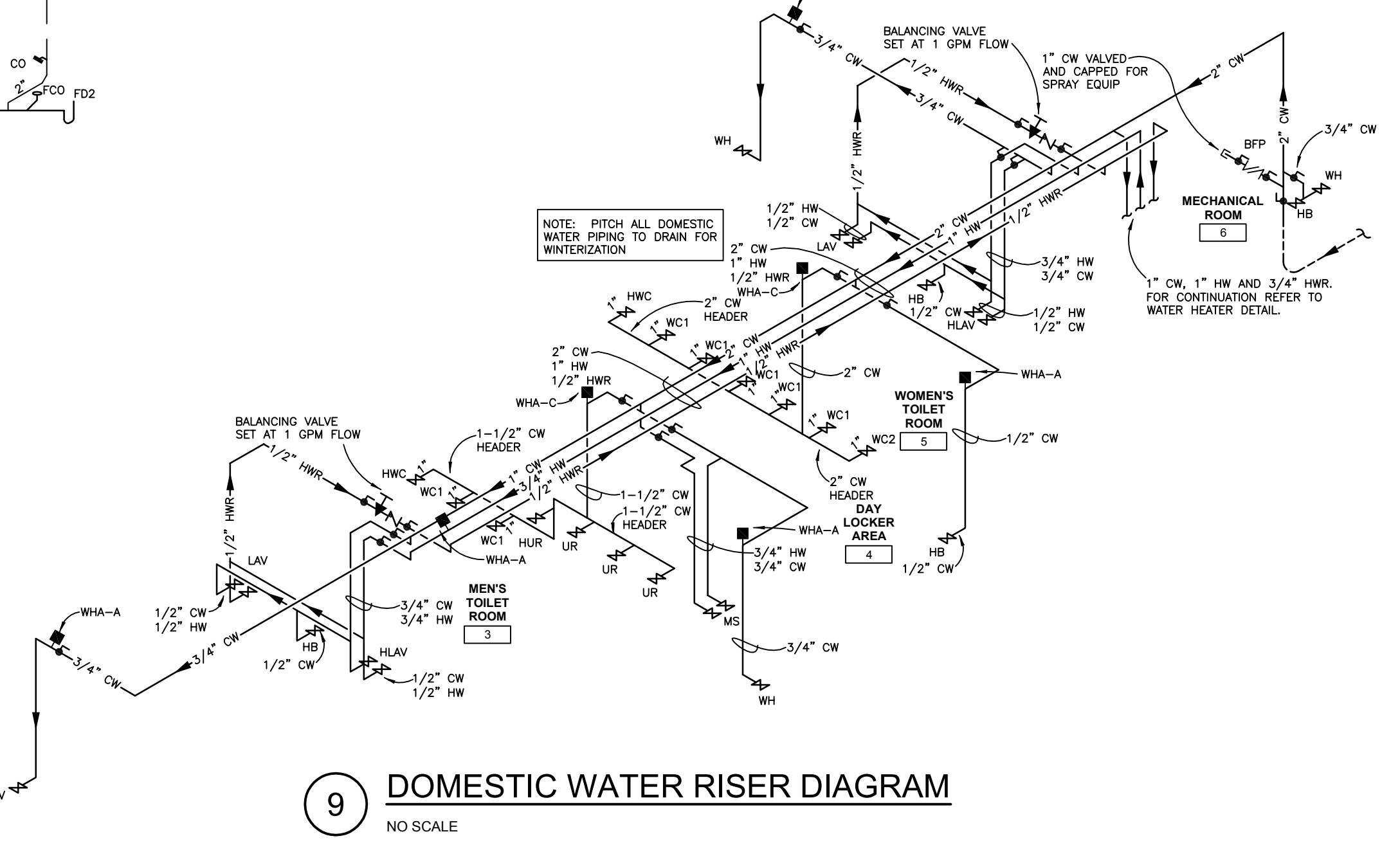
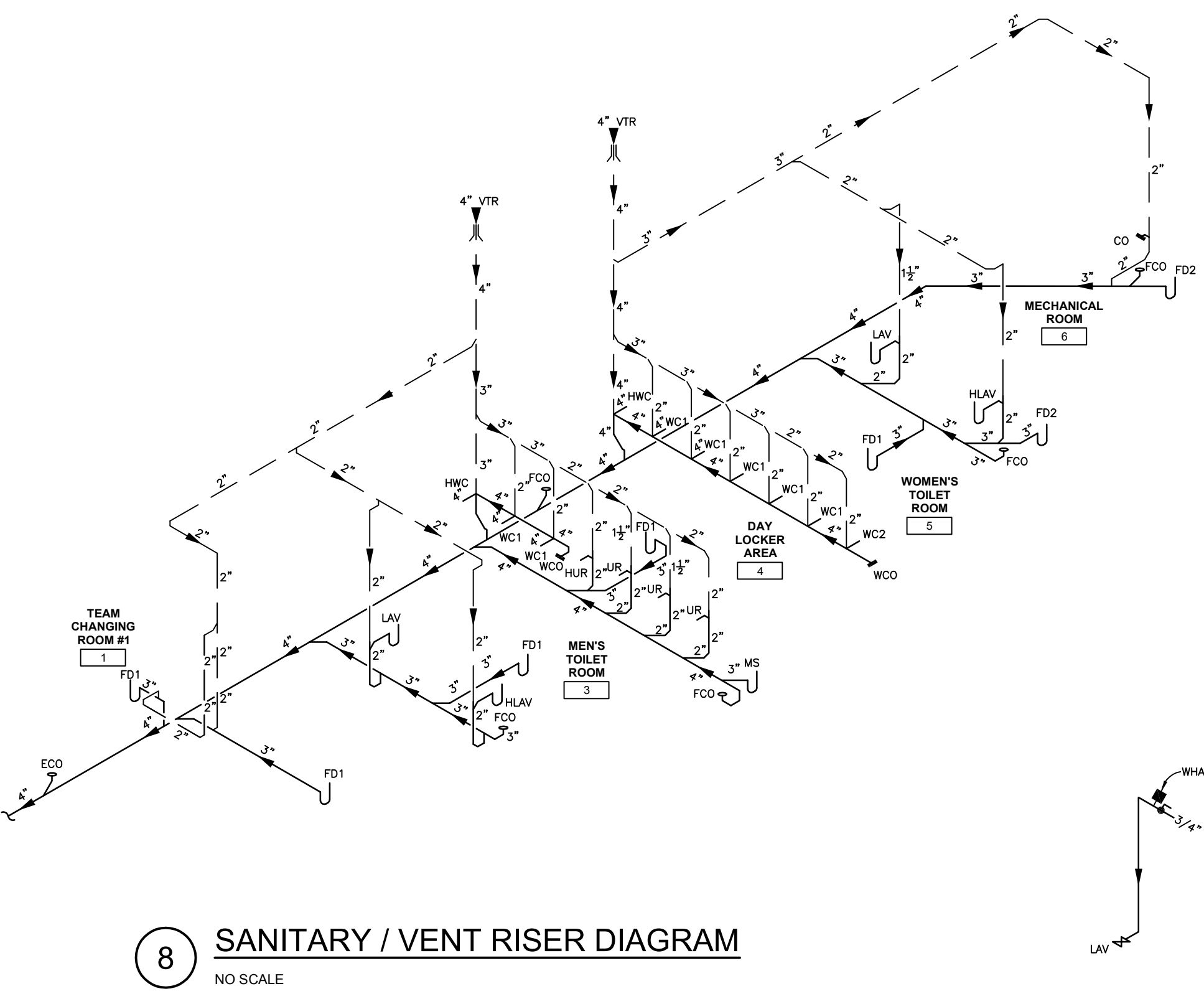
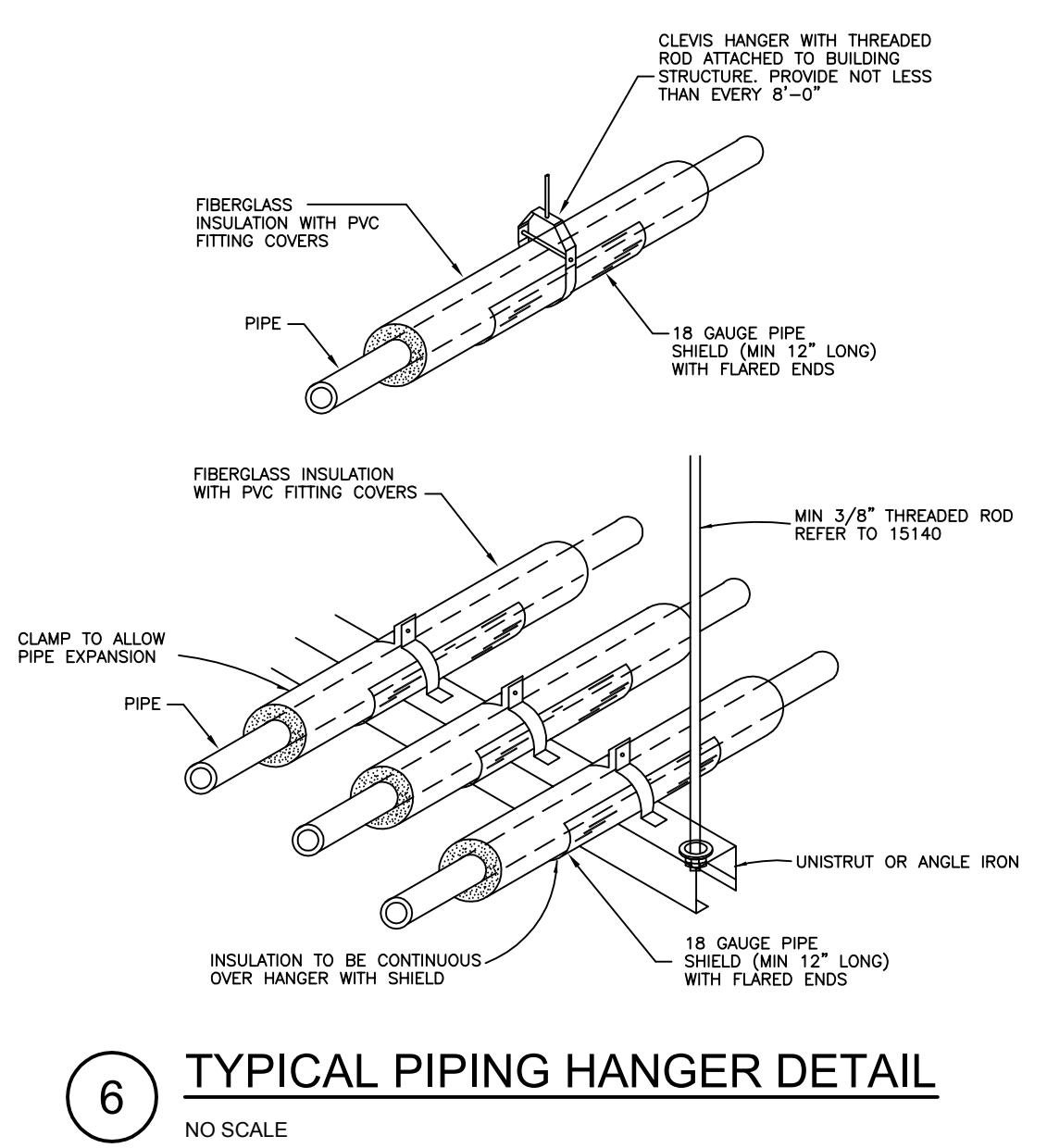
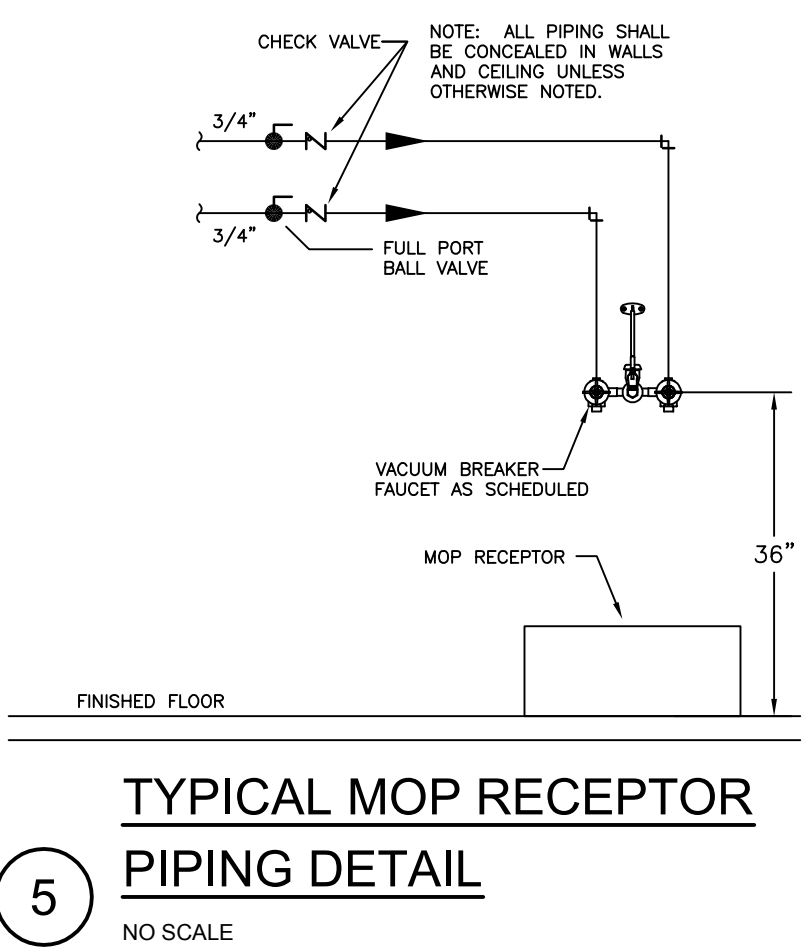
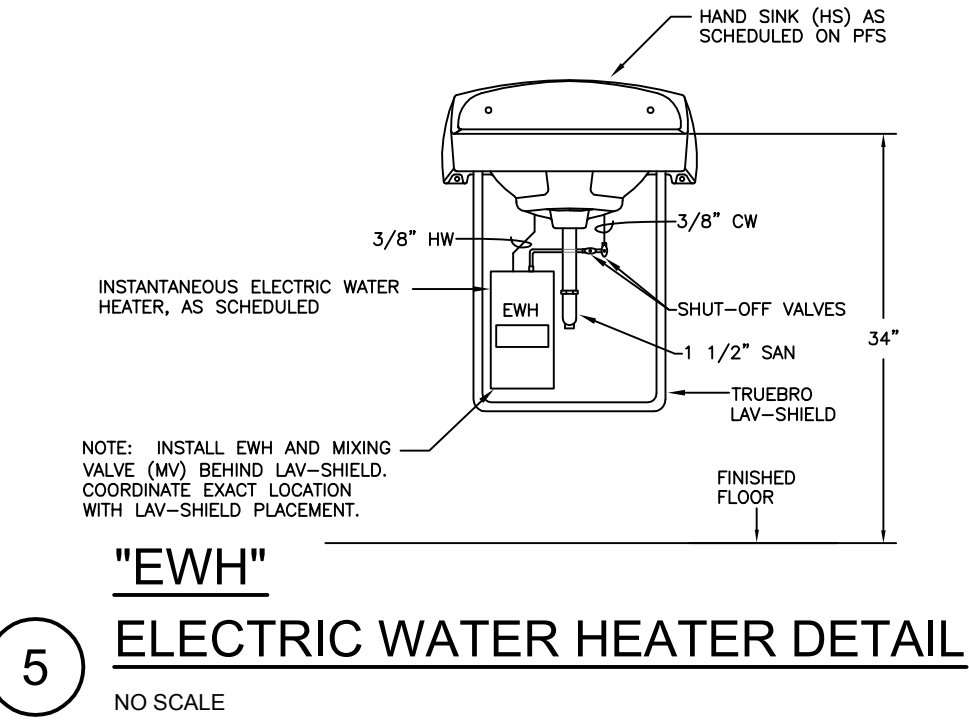
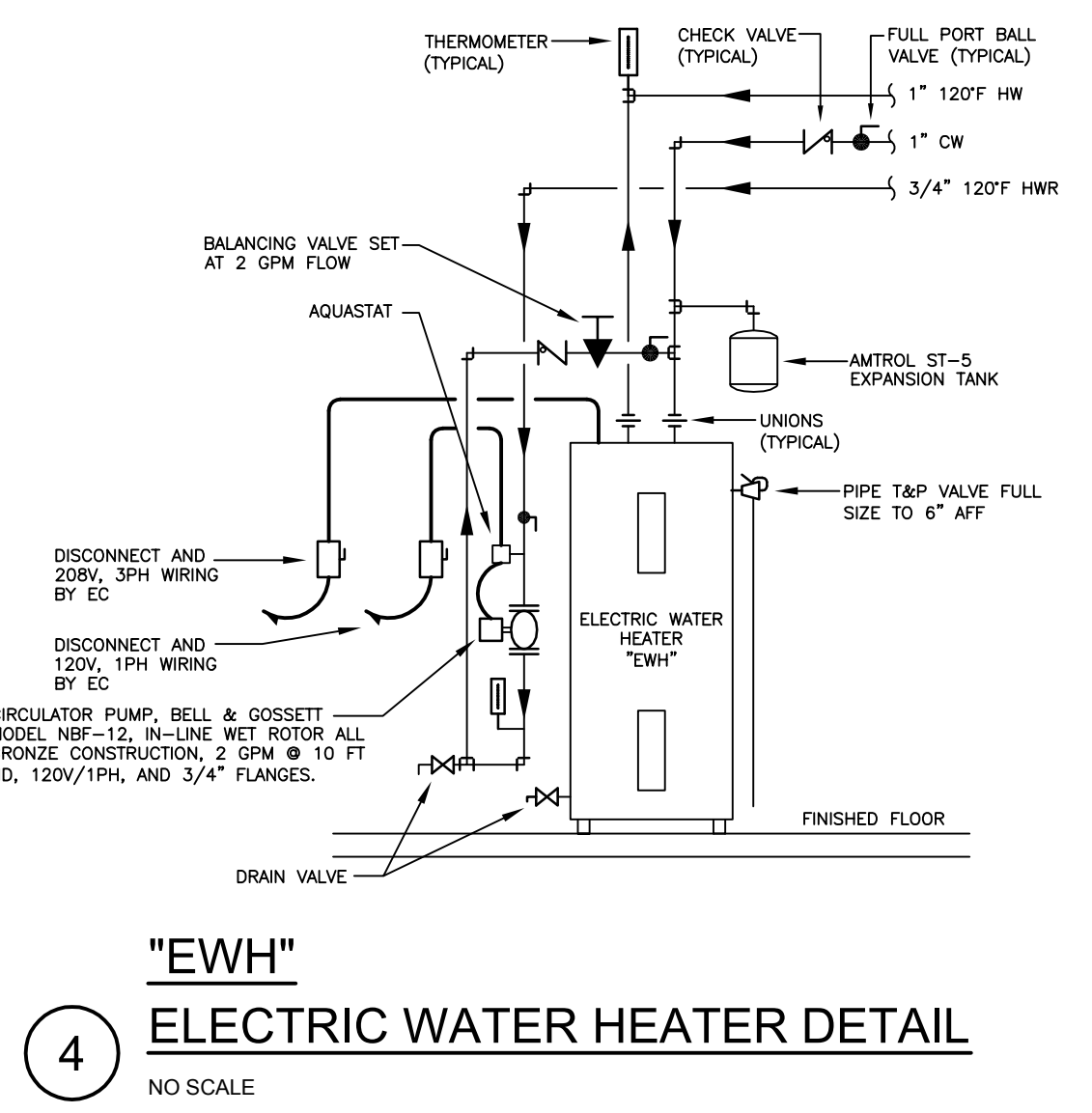
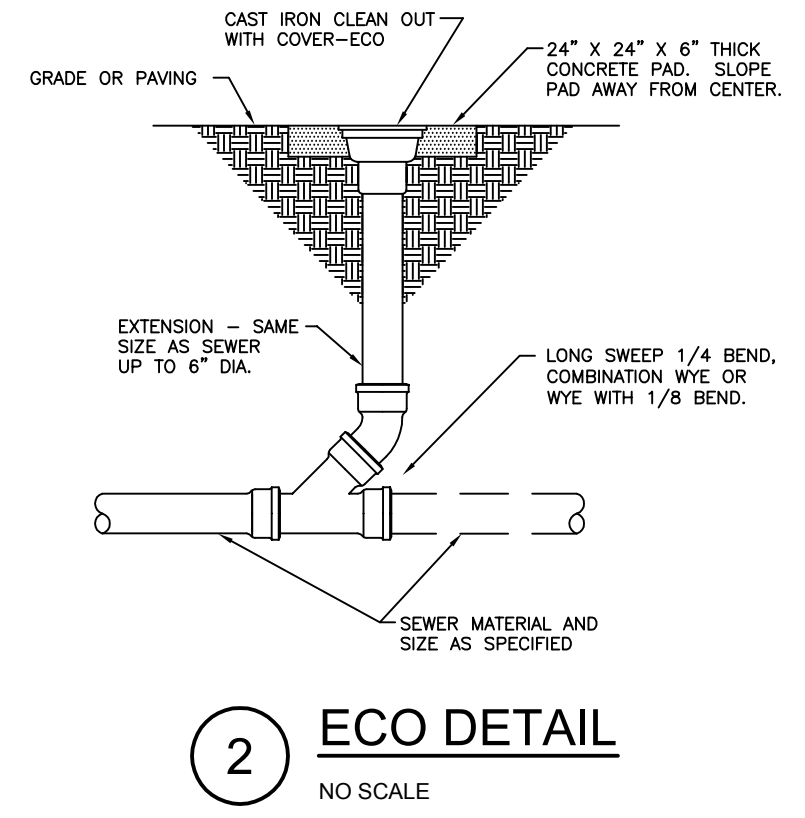
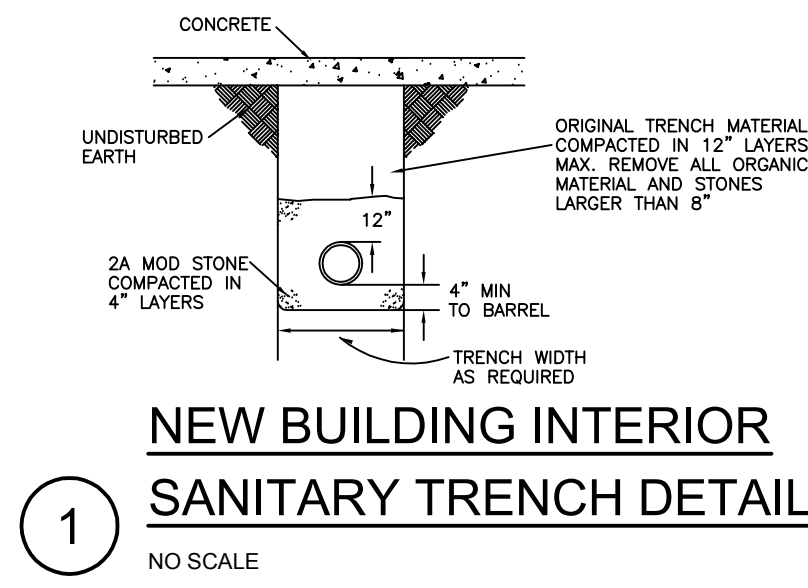
Drawing Date 09.26.17

Drawing No.

Drawn By EBN

Checked By KRZ

P-100



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DEMOLITION AND NEW CONSTRUCTION
AT
WHEELER PARK
FOR THE
COUNTY OF UNION
WEST STIMPSON AVE & ROUTE 1, LINDEN, NJ 07036

No.	Date	Issue or Revision
1	09.26.17	BID SET

Drawing Title
DETAILS

Scale	USA Project No.
As indicated	2014-110

Drawing Date	Drawing No.
09.26.17	

Drawn By	Checked By
EBN	KRZ

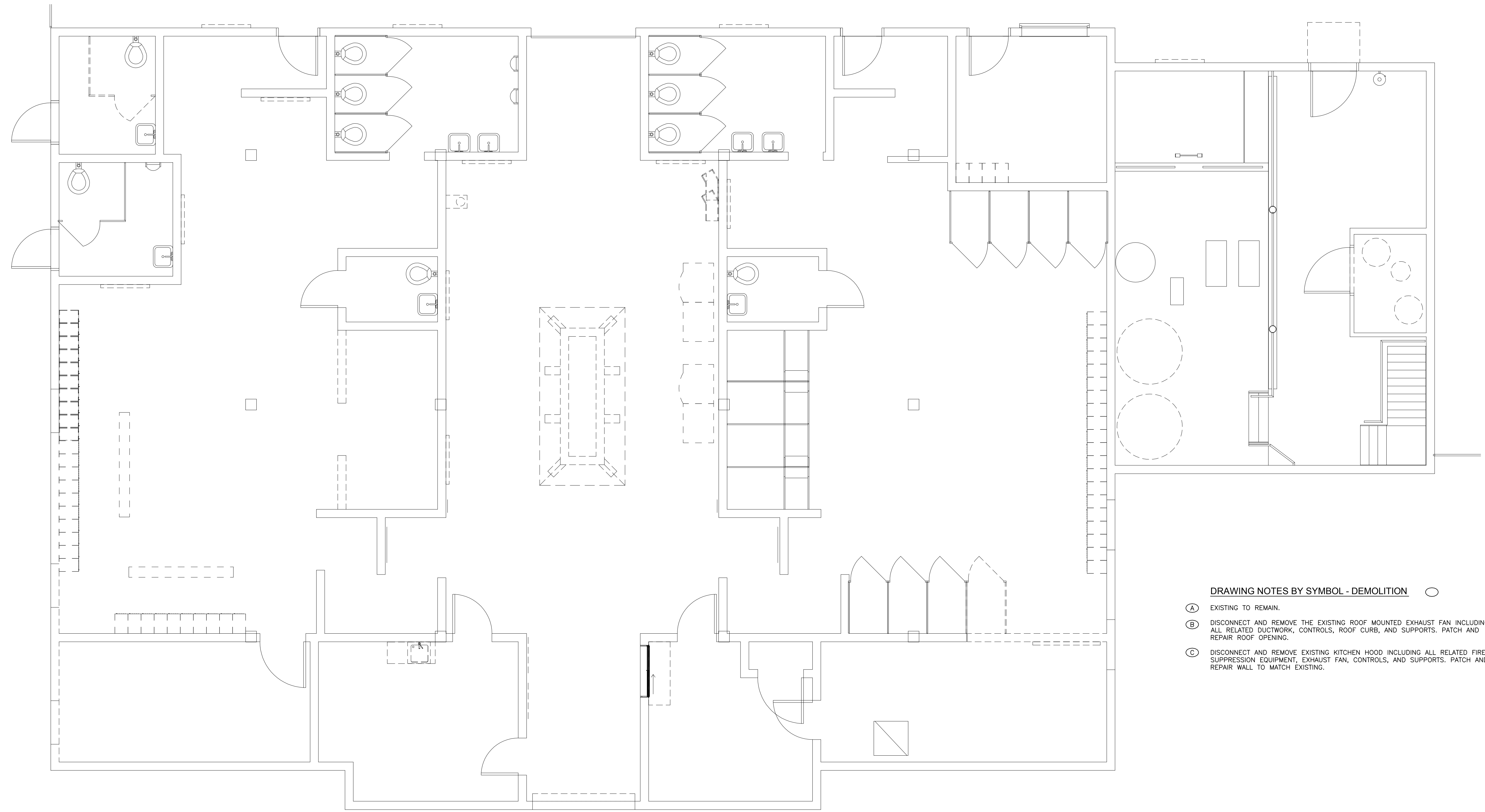
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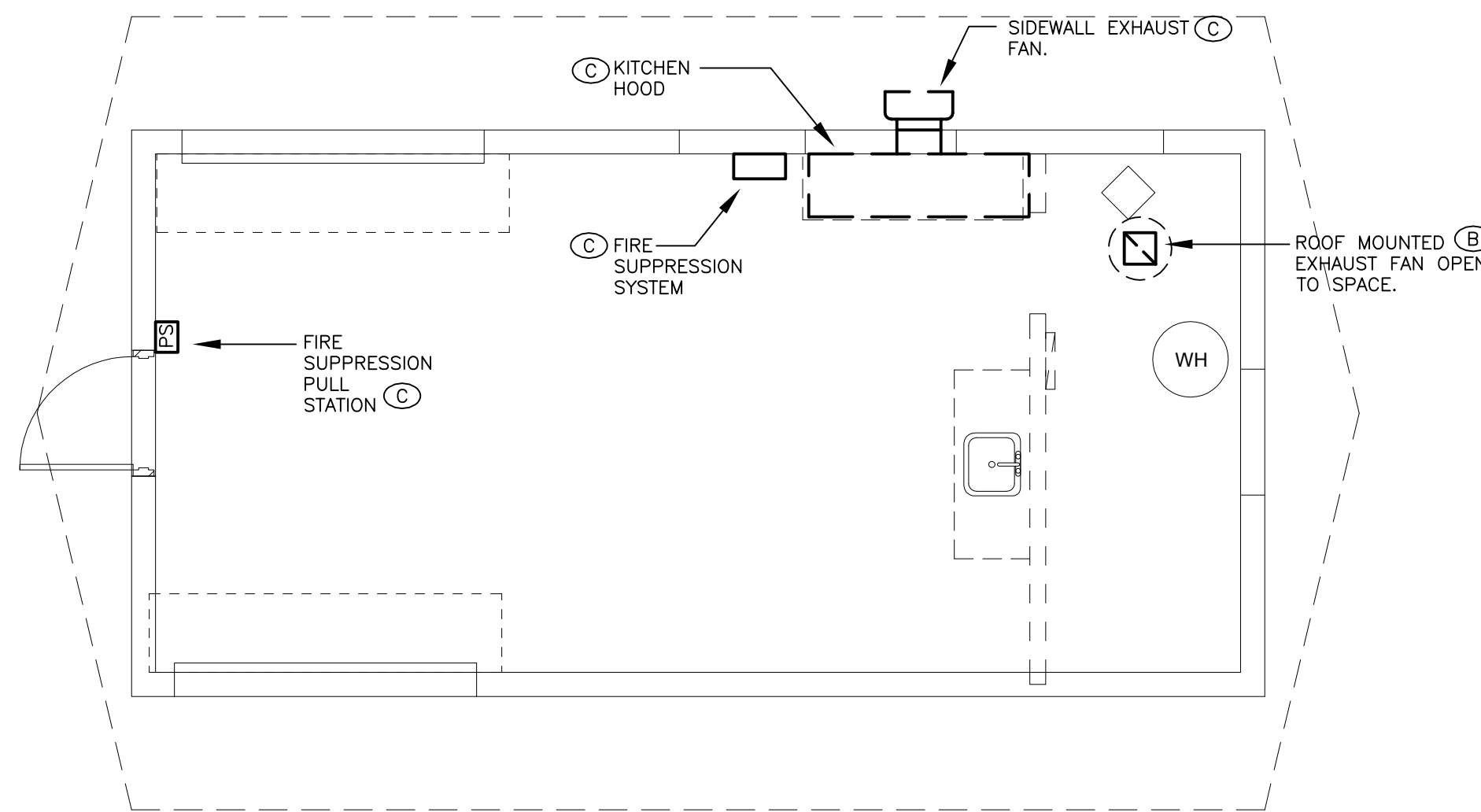
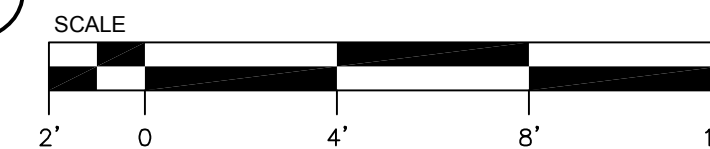


NOTE: EXISTING BUILDING WILL BE DEMOLISHED IN ITS ENTIRETY.

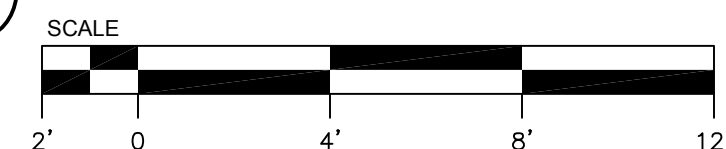
DRAWING NOTES BY SYMBOL - DEMOLITION

- (A) EXISTING TO REMAIN.
- (B) DISCONNECT AND REMOVE THE EXISTING ROOF MOUNTED EXHAUST FAN INCLUDING ALL RELATED DUCTWORK, CONTROLS, ROOF CURB, AND SUPPORTS. PATCH AND REPAIR ROOF OPENING.
- (C) DISCONNECT AND REMOVE EXISTING KITCHEN HOOD INCLUDING ALL RELATED FIRE SUPPRESSION EQUIPMENT, EXHAUST FAN, CONTROLS, AND SUPPORTS. PATCH AND REPAIR WALL TO MATCH EXISTING.

1 POOL BUILDING DEMOLITION PLAN - MECHANICAL



2 EXISTING FOOD SERVICE BUILDING DEMOLITION PLAN - MECHANICAL



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DEMOLITION PLANS - MECHANICAL

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AIR-TO-AIR HEAT EXCHANGER UNIT SCHEDULE

NUMBER	MANUFACTURER	MODEL	EXHAUST CFM	SUPPLY CFM	E.S.P.	TEMPERED COOLING SUPPLY	TEMPERED HEATING SUPPLY	HEATING KW	HEATING MBH	ENERGY RECOVERY EFFECTIVENESS	FAN MOTOR HP	ELECTRICAL DATA		
												VOLTAGE	MCA	MOCF
AA-1	GREENHECK	ERCH-20-15H	1,700	1,700	0.75" O/A 0.75" E/A	80.8°F DB 67.3°F WB	51.0°F DB 43.8°F WB	20	68	70.8%	2 HP O/A 2 HP E/A	208V/3φ	88.9	90

- FEATURES/OPTIONS:
- ELECTRIC HEAT - SCR CONTROL
 - SIDE DUCT CONNECTIONS FOR ALL DUCT INTAKE/DISCHARGE.
 - PREMIUM EFFICIENCY MOTORS.
 - WHEEL ECONOMIZER CONTROL: STOP WHEEL
 - DEFROST CONTROL: TIMED EXHAUST
 - INSULATED LOW-LEAKAGE OUTSIDE AIR DAMPER
 - DIRTY FILTER SENSOR
 - ROTATION SENSOR
 - STARTER/DISCONNECT
 - 24V VAC TRANSFORMER
 - SINGLE POINT POWER CONNECTION
 - PERMATECTOR FINISH
 - DOUBLE WALL INSULATED
 - DOWNTURN WEATHERHOOD.
 - 120V GFCI SERVICE RECEPTACLE, SHIPPED LOOSE.
- SUBJECT TO COMPLIANCE WITH THESE SPECIFICATIONS, OTHER MANUFACTURERS THAT MAY PROVIDE EQUIPMENT INCLUDE SEMCO OR DES CHAMPS.

EXHAUST FAN SCHEDULE

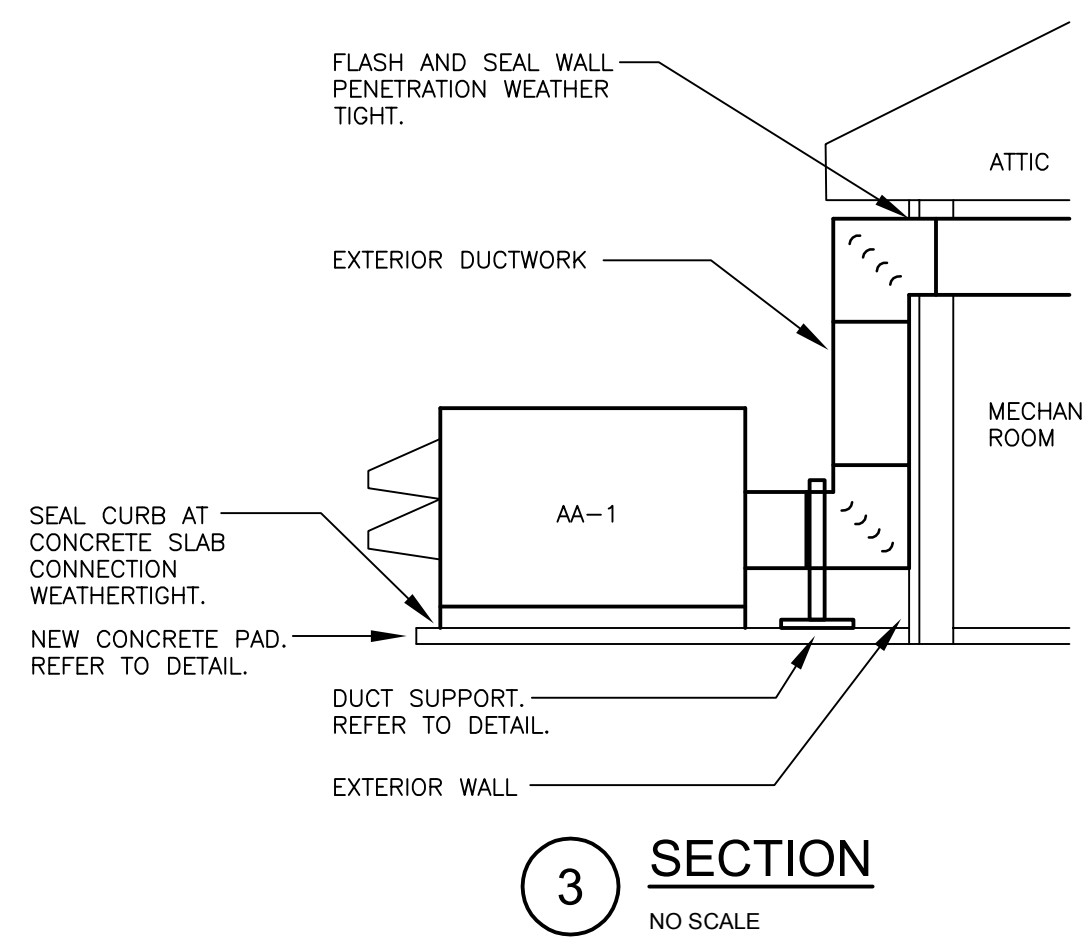
NUMBER	AREA SERVING	MANUFACTURER	TYPE	MODEL	MOTOR TYPE	SELECTED CFM	SET CFM	S.P.	ELEC.	MOTORIZED DAMPER	VOLTAGE	INTERLOCK WITH
EF-1	MECHANICAL ROOM	GREENHECK	INLINE	CSP-A390	DIRECT	350	250	0.25"	120 WATTS	NO	120V/1φ	TIMER SWITCH

- FEATURES/OPTIONS:
- PROVIDE EF WITH THREADED ROD AND VIBRATION ISOLATION KIT.
 - PROVIDE EF WITH SPEED CONTROLLER MOUNTED ON SIDE OF FAN AND SET FOR SPECIFIED CFM.
 - INTEGRAL BACKDRAFT DAMPER.
- SUBJECT TO COMPLIANCE WITH THESE SPECIFICATIONS, OTHER MANUFACTURERS THAT MAY PROVIDE EQUIPMENT INCLUDE TWIN CITY OR COOK.

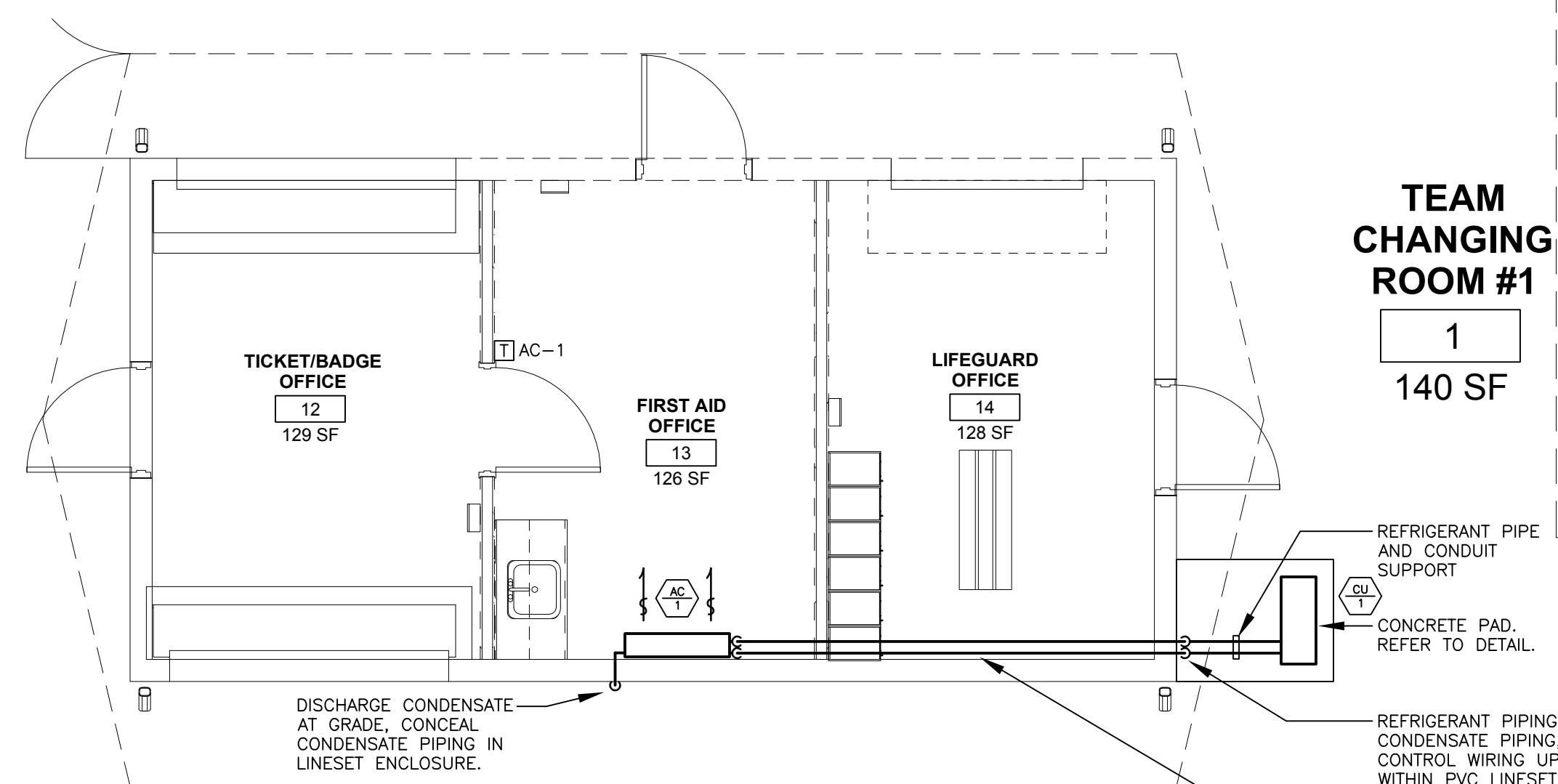
DUCTLESS SPLIT AIR CONDITIONING UNIT SCHEDULE

NUMBER	MANUFACTURER	MODEL NO.		MINIMUM COOLING BTUH	MAXIMUM COOLING BTUH	SEER	AIRFLOW CFM @ HIGH SPEED	ELECTRICAL DATA		
		INDOOR	OUTDOOR					V/PH/Hz	MCA	MOCF
AC-1/CJ-1	DAIKIN	PKA-A12H46	FUY-A12H46	6,000	12,000	15.2	380	208/1/60	13	15

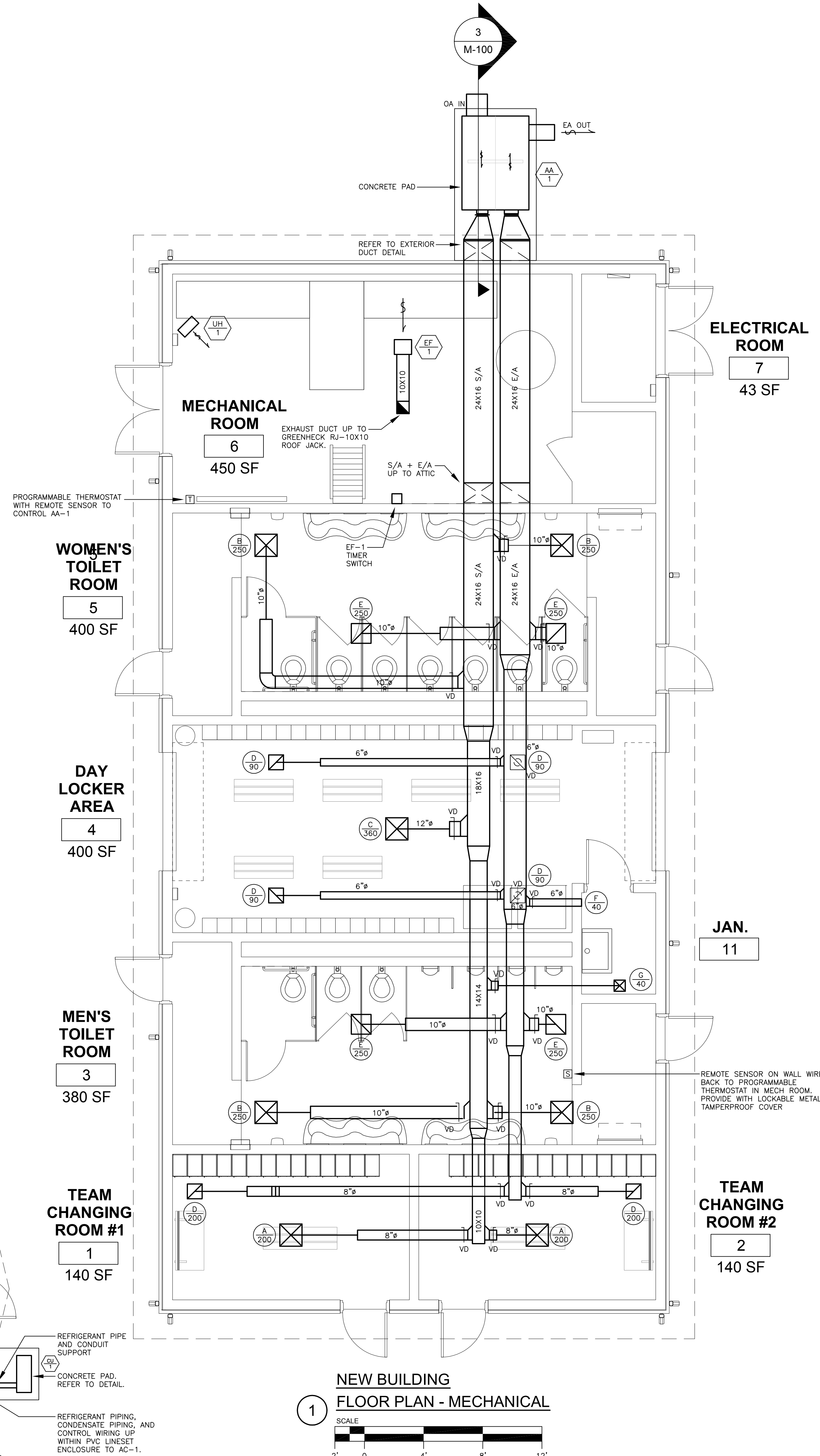
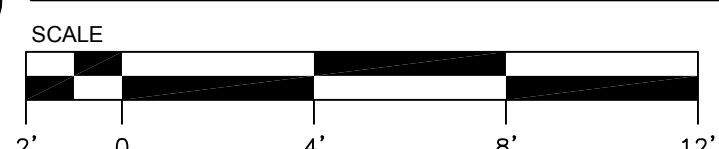
- FEATURES/OPTIONS:
- PROVIDE OUTDOOR UNIT WITH 7 YEAR COMPRESSOR WARRANTY.
 - PROVIDE INDOOR UNITS WITH FILTERS.
 - REFRIGERANT PIPE SIZES, BALL VALVES, ACCESSORIES, AND ARRANGEMENTS PER MFR'S RECOMMENDATIONS.
 - PROVIDE REFRIGERANT CHARGE (R-410A).
 - PROVIDE REFRIGERANT PIPING SUBMITTALS DURING SHOP DRAWING PROCESS.
 - PROVIDE ALL UNITS WITH ONE YEAR PARTS WARRANTY.
 - ALL CU'S TO INCLUDE MODULATING INVERTER DRIVEN COMPRESSORS.
 - PROVIDE ALL INDOOR UNITS WITH FACTORY INSTALLED CONDENSATE PUMPS WITH SECONDARY DRAIN LEVEL SENSOR. PROVIDE ONE ADDITIONAL CONDENSATE PUMP TO BE TURNED OVER TO THE OWNER.
 - CONTRACTOR SHALL BE FACTORY CERTIFIED FOR THE INSTALLATION OF THE SYSTEM. PROVIDE CERTIFICATION COPY AS PART OF THE SUBMITTAL PROCESS.
 - OUTDOOR REFRIGERANT CIRCUIT ACCESS PORTS SHALL BE FITTED WITH LOCKING TYPE TAMPER-RESISTANT CAPS.
 - PROVIDE MANUFACTURER RECOMMENDED ISOLATION BALL VALVES FOR EACH INDOOR UNIT.
 - PROVIDE EACH INDOOR SS UNIT WITH NEW-1 WALL MOUNTED CONTROLLER.
- SUBJECT TO COMPLIANCE WITH THESE SPECIFICATIONS, OTHER MANUFACTURERS THAT MAY PROVIDE EQUIPMENT INCLUDE DAIKIN OR LG.



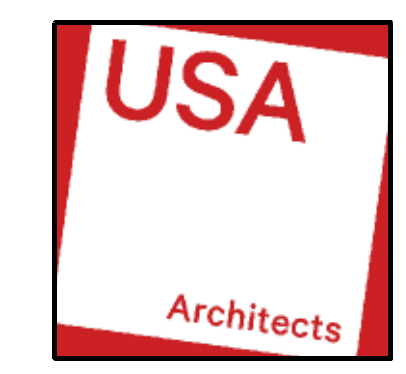
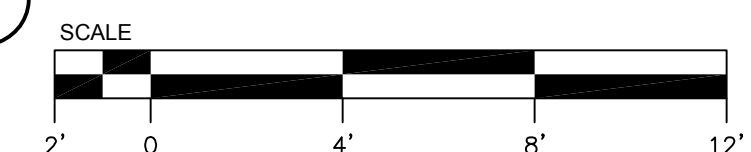
3 SECTION
NO SCALE



2 EXISTING BUILDING FLOOR PLAN - MECHANICAL
SCALE



1 NEW BUILDING FLOOR PLAN - MECHANICAL
SCALE



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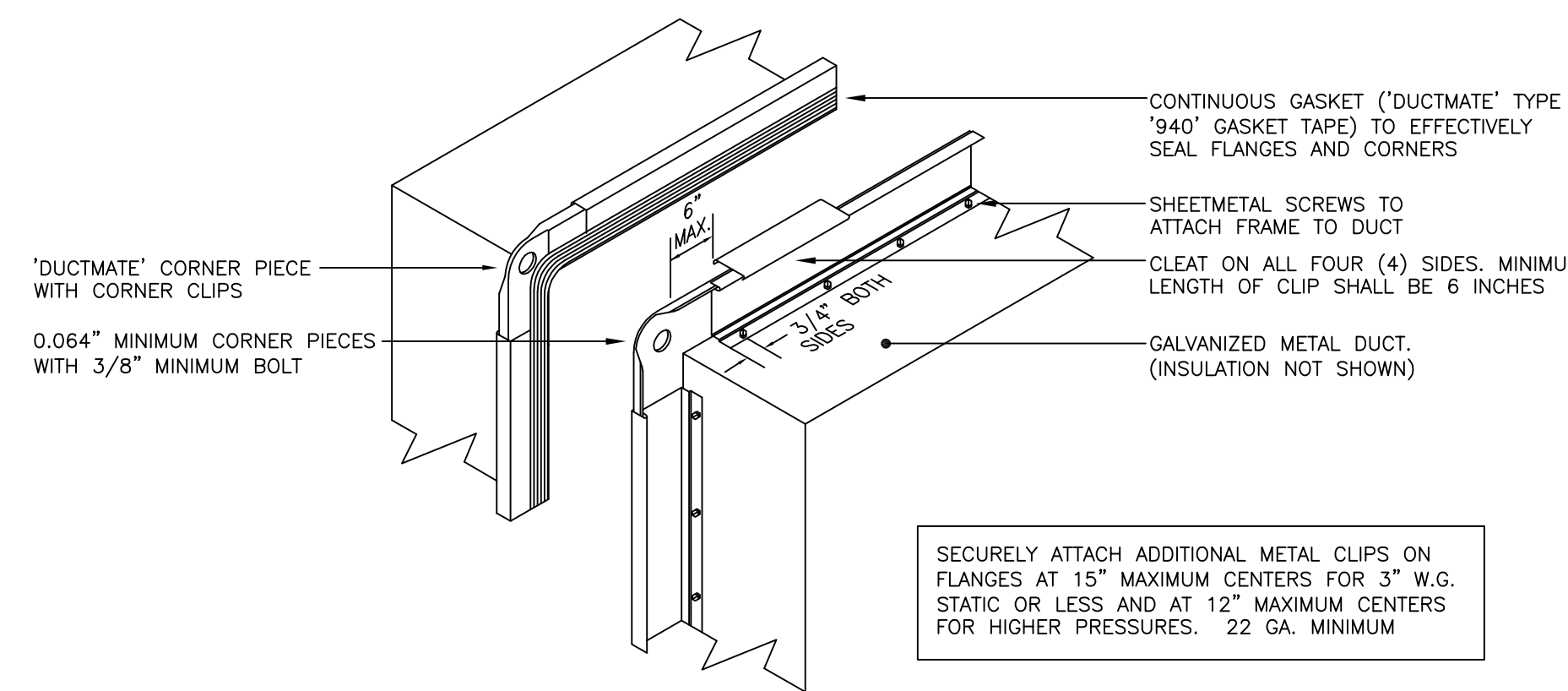
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GRILLE AND DIFFUSER SCHEDULE								
SYMBOL	MANUFACTURER	MODEL	SIZE	FRAME STYLE	PATTERN	MATERIAL	FINISH	VOLUME DAMPER
A	PRICE	SMDA	8"9/16"x18"	SURFACE	4-WAY BLOW	STEEL	WHITE	YES
B	PRICE	SMDA	10"9/16"x18"	SURFACE	4-WAY BLOW	STEEL	WHITE	YES
C	PRICE	SMDA	12"9/16"x18"	SURFACE	4-WAY BLOW	STEEL	WHITE	YES
D	PRICE	530	12"x12"	SURFACE	E/A OR R/A	STEEL	WHITE	YES
E	PRICE	530	16"x16"	SURFACE	E/A OR R/A	STEEL	WHITE	YES
F	PRICE	530	12"x12"	SIDEWALL	E/A OR R/A	STEEL	WHITE	YES

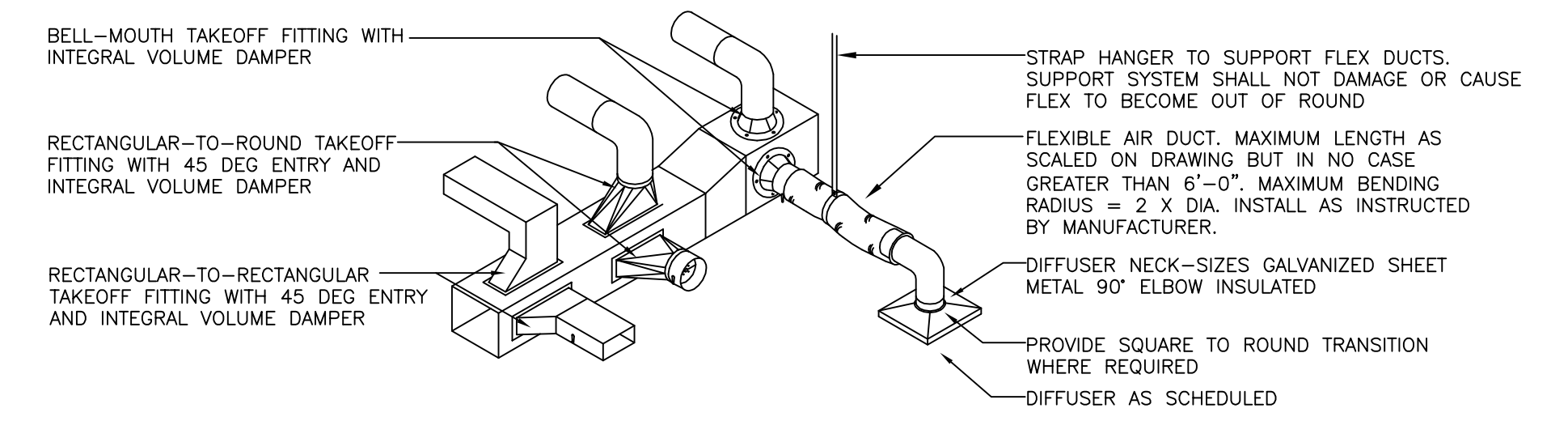
FEATURES/OPTIONS:
 1. CONTRACTOR TO COORDINATE ALL FRAME STYLES WITH CEILING CONSTRUCTION.
 2. CONTRACTOR TO SPRAY PAINT ALL RETURN AIR PLENUMS FLAT BLACK.
 SUBJECT TO COMPLIANCE WITH THESE SPECIFICATIONS; OTHER MANUFACTURERS THAT MAY PROVIDE EQUIPMENT INCLUDE TITUS OR KRUEGER.

ELECTRIC HEAT SCHEDULE							
NUMBER	MANUFACTURER	MODEL	KW	BTUH	CONFIGURATION	ELECTRICAL DATA	
						VOLTAGE	AMPS
UH-1	QMARK	MUH	3	10,240	UNIT HEATER	208V/1Ø	14.5

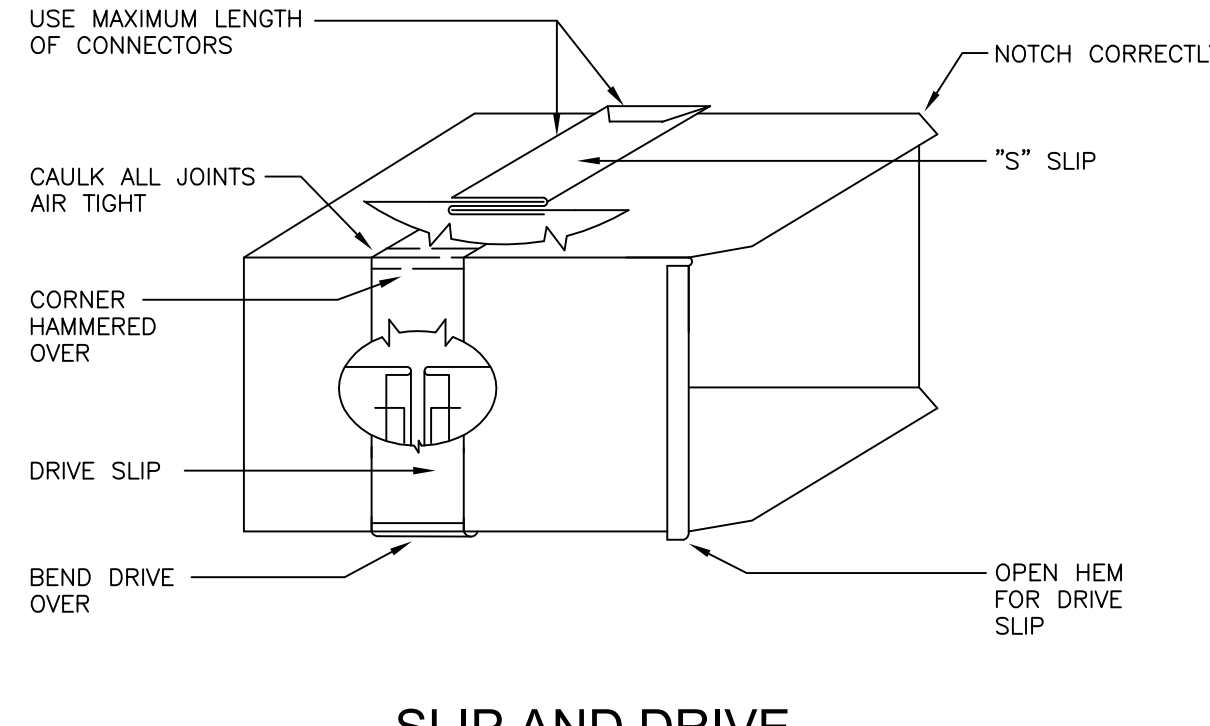
FEATURES/OPTIONS:
 1. COORDINATE EXACT LOCATION OF UNITS WITH ARCHITECT.
 2. COLOR TO BE SELECTED BY ARCHITECT.
 3. PROVIDE WITH INTEGRAL THERMOSTAT.
 SUBJECT TO COMPLIANCE WITH THESE SPECIFICATIONS; OTHER MANUFACTURERS THAT MAY PROVIDE EQUIPMENT INCLUDE BERKO OR INDECO.



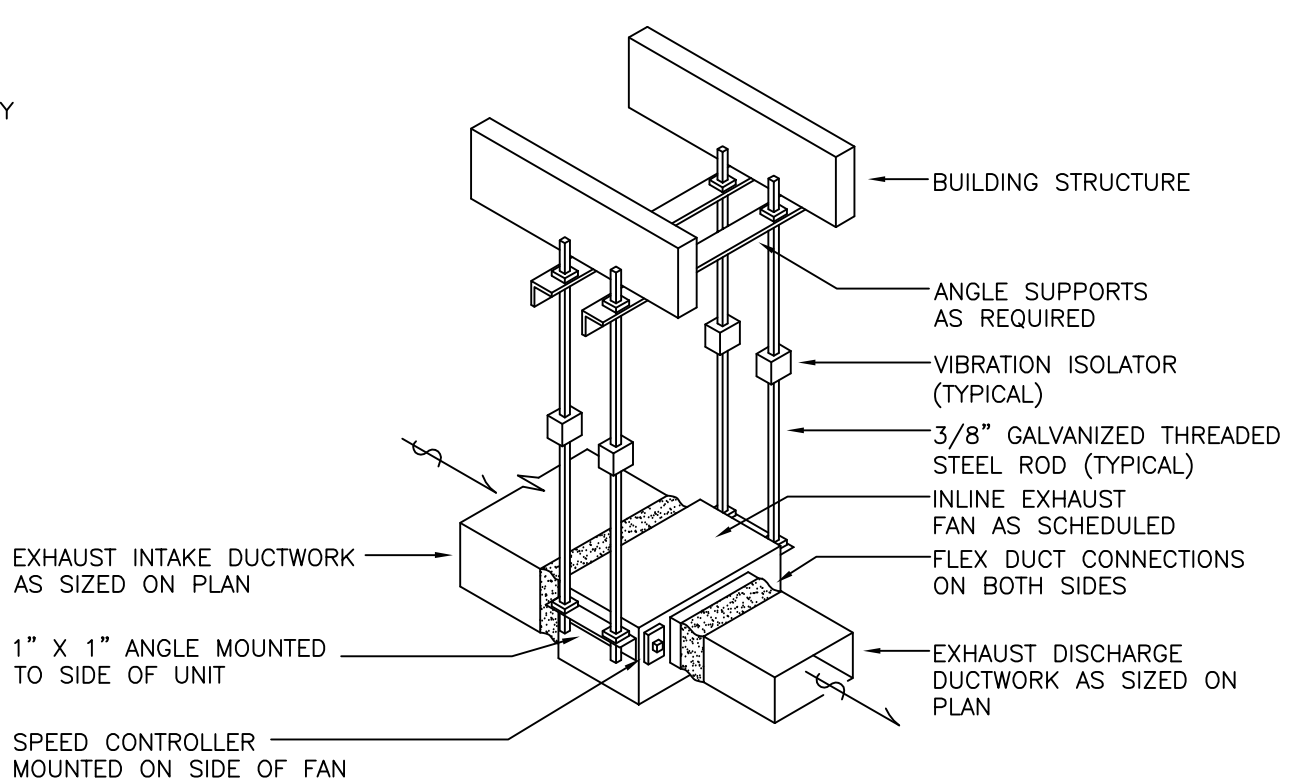
1 FLANGED DUCT DETAIL
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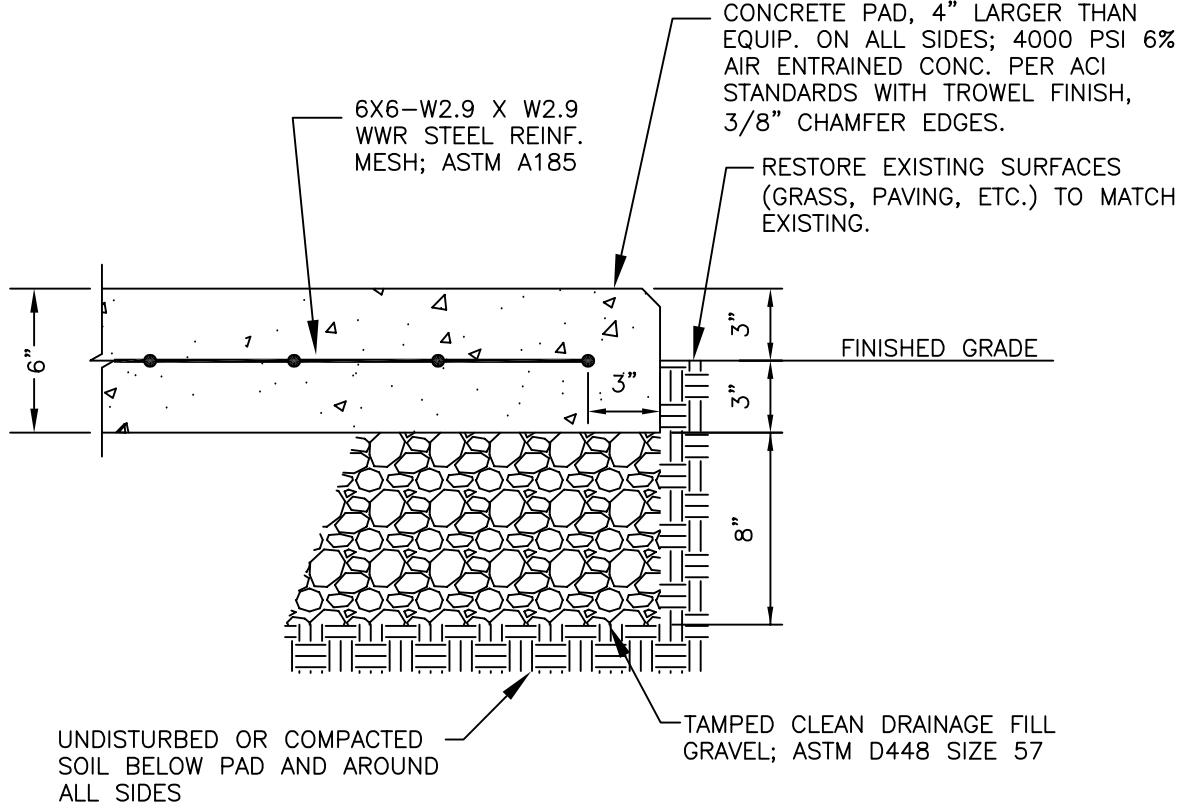
2 BRANCH DUCT AND TAKE-OFF DETAIL
NO SCALE



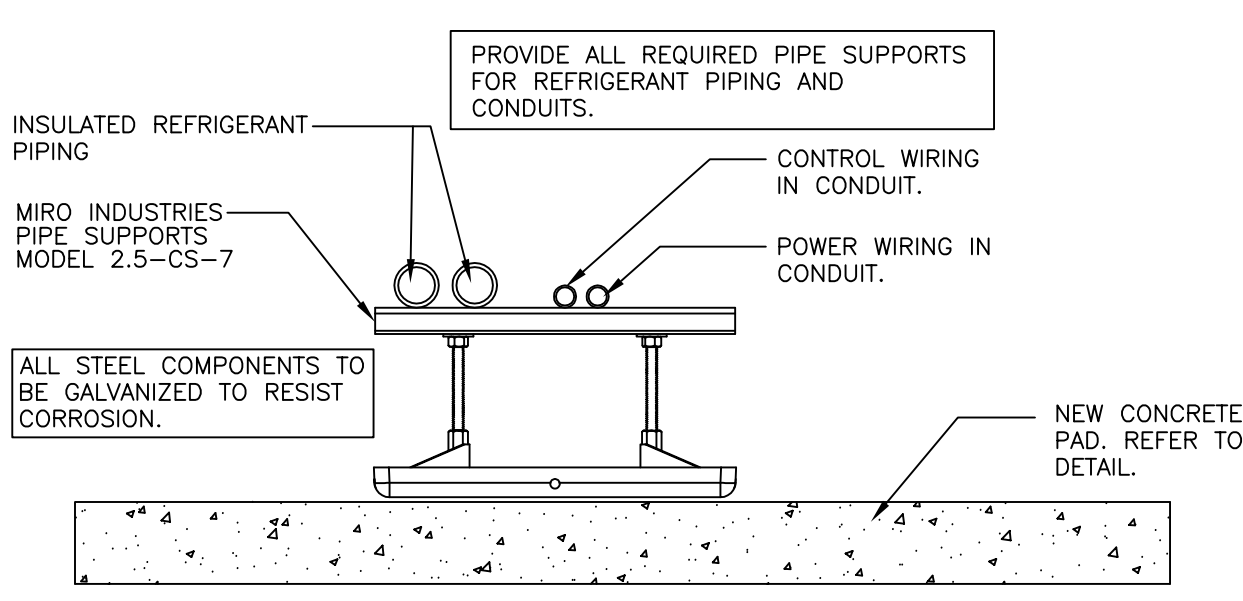
3 SLIP AND DRIVE DUCT JOINT DETAIL
NO SCALE



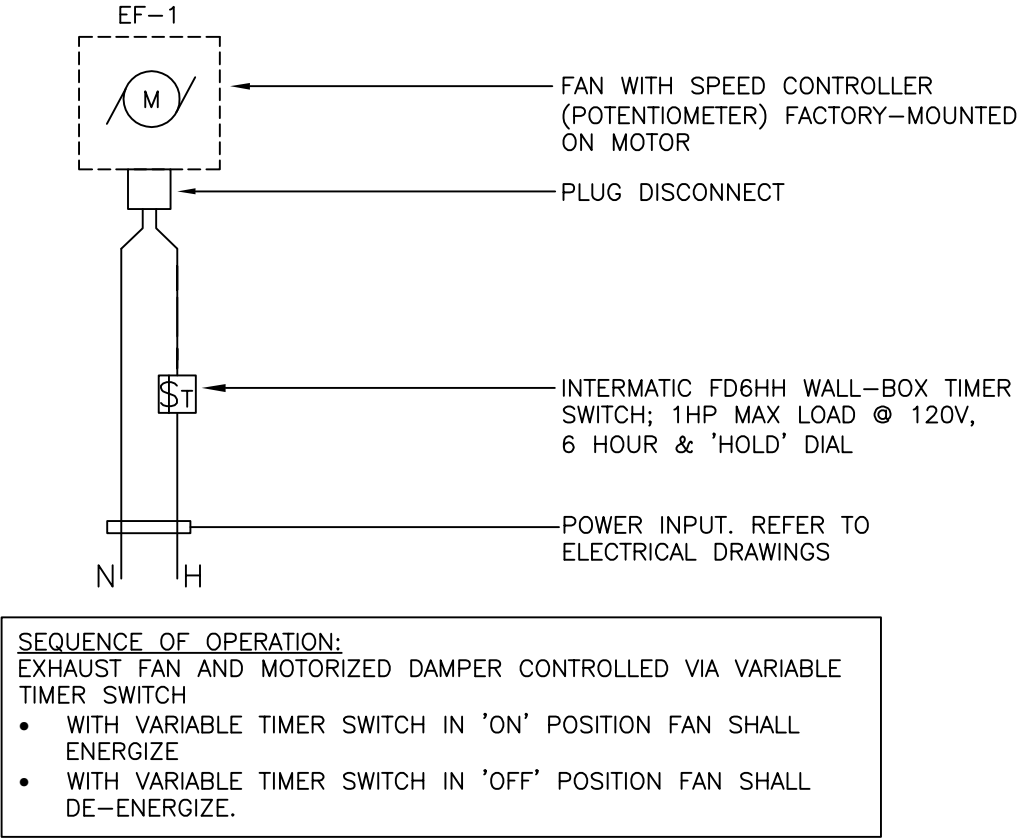
4 IN-LINE EXHAUST FAN DETAIL
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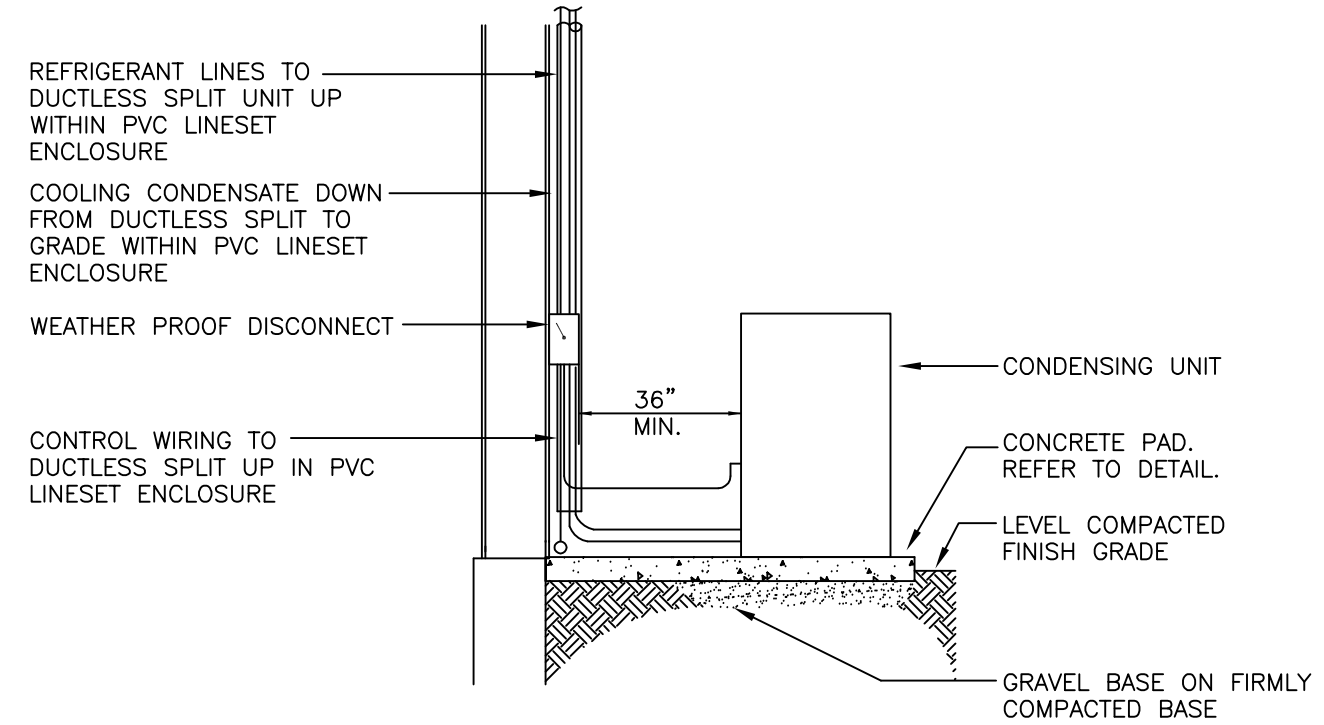
5 CONCRETE PAD DETAIL
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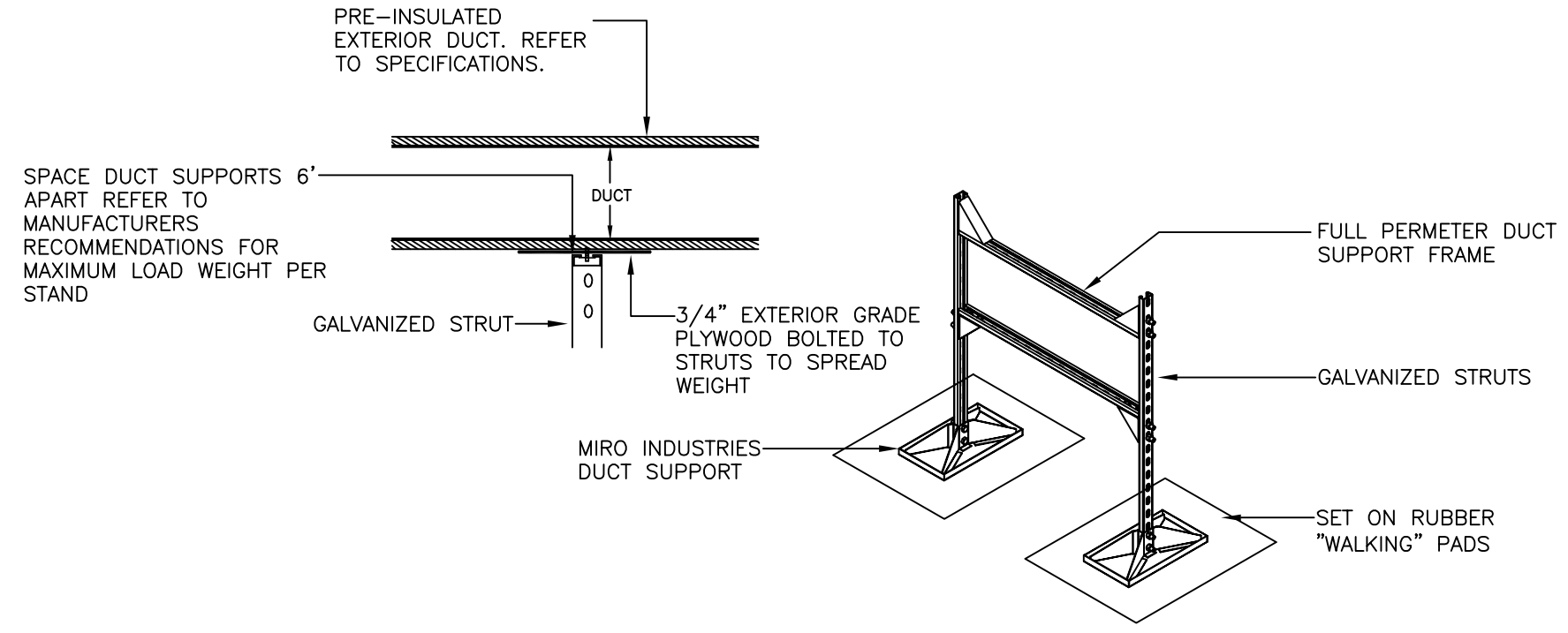
6 REFRIGERANT PIPE & CONDUIT SUPPORT DETAIL
NO SCALE



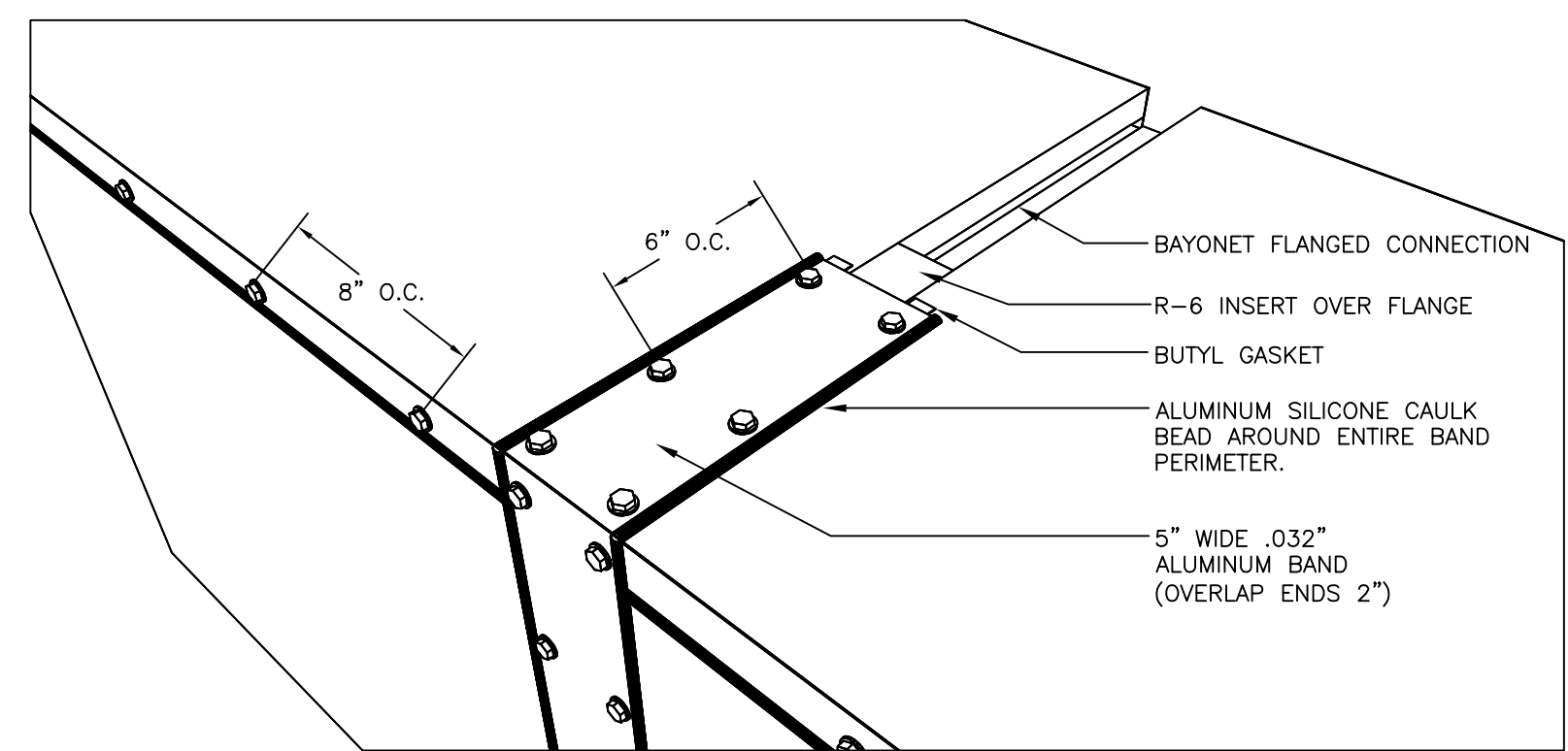
7 EXHAUST FAN WIRING SCHEMATIC
NO SCALE



8 CONDENSING UNIT MOUNTING DETAIL
NO SCALE



9 EXTERIOR DUCT SUPPORT DETAIL
NO SCALE



10 EXTERIOR DUCTWORK JOINT DETAIL
NO SCALE



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ELECTRICAL GENERAL NOTES

GENERAL REQUIREMENTS

- A. ELECTRICAL MATERIALS AND METHODS SHALL COMPLY WITH 2014 NFPA 70: NATIONAL ELECTRIC CODE (N.E.C.).
B. PROVIDE ALL LABOR, MATERIAL, AND EQUIPMENT REQUIRED TO INSTALL ALL WORK AS INDICATED ON THE PLANS, AND AS REQUIRED, TO PROVIDE COMPLETE WORKING SYSTEMS.
C. BEFORE SUBMITTING A PROPOSAL, BIDDERS SHALL CAREFULLY EXAMINE SITE OF PROPOSED WORK AND FULLY INFORM THEMSELVES AS TO ALL EXISTING CONDITIONS AND LIMITATIONS...

CUTTING AND PATCHING

- A. CUT AND PATCH WALLS, CEILINGS, FLOORS AND OTHER ASSEMBLIES AND SURFACES AS REQUIRED TO PERFORM THE REQUIRED ELECTRICAL WORK.
B. PERFORM CUTTING AND EXCAVATION TO PERFORM THE REQUIRED IN SLAB, UNDER SLAB, OR UNDERGROUND ELECTRICAL WORK.
C. ALL EXCAVATION SHALL BE PERFORMED TO AVOID DAMAGING EXISTING CONCEALED PIPING AND/OR CONDUIT...

IDENTIFICATION AND LABELING (260553)

- A. INSTALL WIRING WITH COLOR CODING TO IDENTIFY CONDUCTORS BY VOLTAGE SYSTEM AND PHASE. PROVIDE LABELS TO IDENTIFY CIRCUIT NUMBERS.
B. LABEL ALL DEVICES (SWITCHES, RECEPTACLES, CONTROL STATIONS, ETC.), ON COVER, WITH PANEL AND CIRCUIT NUMBER DESIGNATION.
C. LABEL EACH DISCONNECTING MEANS LEGIBLY AND PERMANENTLY MARKED TO INDICATE ITS PURPOSE.

WIRING METHODS (260519, 260533)

- A. WIRING METHODS SHALL CONSIST OF 600V INSULATED COPPER CONDUCTORS, #12 AWG MINIMUM AND INCLUDE THE FOLLOWING OPTIONS, EACH IN ACCORDANCE WITH N.E.C. APPLICATIONS:
• TYPE 'MC' CABLE, MINIMUM 12/2 + GROUND IN CONCEALED LOCATIONS
• THHN/THWN INSULATED CONDUCTORS IN ELECTRICAL METALLIC TUBING, INDOORS
• THHN/THWN INSULATED CONDUCTORS IN RIGID GALVANIZED STEEL, OUTDOORS
• THWN INSULATED CONDUCTORS IN SCHEDULE 40 PVC CONDUIT UNDERGROUND OR UNDERSLAB

GENERAL DEMOLITION NOTES

- D. PROVIDE PULL BOXES, SIZE AND QUANTITY AS REQUIRED, SO THAT THERE ARE NO MORE THAN (3) CONSECUTIVE 90° ELBOWS IN A CONDUIT RUN.
E. ALL WIRING SYSTEMS SHALL BE RUN CONCEALED ABOVE CEILINGS, IN WALLS OR BELOW FLOORS EXCEPT WHERE NOTED.
F. SURFACE RACEWAY: WHERE INDICATED OR REQUIRED, DUE TO SOLID CONSTRUCTION IN FINISHED AREAS, PROVIDE SURFACE METAL RACEWAY SYSTEM INCLUDING ALL FITTINGS AND ACCESSORIES.
G. PROVIDE WIRING AND FINAL ELECTRICAL CONNECTION, INCLUDING ANY DISCONNECTS REQUIRED BY THE N.E.C., TO ALL EQUIPMENT FURNISHED UNDER OTHER TRADE SECTIONS...

SEALANTS (260505)

- A. PROVIDE SLEEVES AND WATERTIGHT SEALANT AT EXTERIOR ELECTRICAL PENETRATIONS. SELECT SEALANT TO MATCH SUBSTRATE AND APPLY PER MANUFACTURER'S INSTRUCTIONS.
B. MAINTAIN INTEGRITY OF ANY FIRE-RATED WALLS, FLOORS OR CEILINGS PENETRATED BY ELECTRICAL EQUIPMENT, CONDUIT OR WIRING.
C. PROVIDE SEALANTS AT FIRE RATED WALLS OR FLOORS OR EXTERIOR OPENINGS, CREATED BY REMOVAL OF ELECTRICAL MATERIALS.

PANELBOARDS (262416)

- A. REFER TO PANEL SCHEDULES FOR PANELBOARD RATINGS AND CHARACTERISTICS.
B. CIRCUIT BREAKERS 2 AND 3 POLE SHALL BE COMMON TRIP. NO TIE HANDLES OR TANDEMS SHALL BE ACCEPTED.
C. COORDINATE ANY EXTRA-DEEP WALLS REQUIRED FOR RECESSED PANEL INSTALLATION.
D. CIRCUIT NUMBERS SHOWN TO PANELS ARE FOR REFERENCE ONLY.

WIRING DEVICES (262726)

- A. DUPLEX RECEPTACLES: 20AMP/120VOLT, NEMA5-20R UNLESS NOTED, HUBBELL '5362' SERIES. PROVIDE SPECIAL TYPES WHERE INDICATED (GR, CLOCK, TAMPER RESISTANT, WEATHER RESISTANT, ETC.)
B. SWITCHES: 20AMP/120-277VOLT, SPST, DPST, 3-WAY, OR 4-WAY AS INDICATED. HUBBELL 'CSB' SERIES
C. WIRING DEVICES SHALL BE NYLON BODY 302/304 STAINLESS STEEL COVER PLATE. COLOR SELECTED BY ARCHITECT/ENGINEER.
D. MOUNT RECEPTACLES AND COMMUNICATION OUTLETS AT 18" AFF TO CENTER OF BOX, AND SWITCHES AT 45" AFF TO CENTER OF BOX, UNLESS OTHERWISE NOTED OR REQUIRED BY N.E.C.

ABBREVIATIONS

- AFC AMPERES
AFF ABOVE FINISHED CEILING
AFS ABOVE FINISHED FLOOR
ATS AUTOMATIC TRANSFER SWITCH
ATS ABOVE FINAL GRADE
BFC BELOW FINISHED CEILING
BFF BELOW FINISHED FLOOR
BFG BELOW FINAL GRADE
CB CIRCUIT BREAKER
CCTV CLOSED CIRCUIT TELEVISION CENTER LINE
CLG CEILING
CT COUNTER HEIGHT= 44" AFF CT (UNLESS OTHERWISE NOTED)
C&P CORD AND PLUG C&P DRAWING
DWS ELECTRICAL CONTRACTOR ELECTRICAL METALLIC TUBING EXISTING TO REMAIN
EMT ELECTRICAL METALLIC TUBING EXISTING TO REMAIN
EWC FIRE ALARM CONTROL PANEL
FACP FIRE PROTECTION CONTROL
GC GENERAL CONTRACTOR
GF GROUND FAULT INTERRUPTER
GRND GROUND
H HORIZONTAL
HP HORIZONTAL
H/L HORIZONTAL
IG ISOLATED GROUND
JIB JUNCTION BOX
KES KITCHEN EQUIPMENT SUPPLIER
KVA KILOVOLT-AMPERE
KW KILOWATT
MDC DEVICE MOUNTED LOW MOUNTED
MCH MECHANICAL CONTRACTOR
MCHB MOUNTING HEIGHT
MNT MINIMUM
MNO MAIN LUGS ONLY
MOTD MOTOR OPERATED DAMPER
MTO MOUNTED
MTS MANUAL TRANSFER SWITCH
MW MICROWAVE
N NOT IN CONTRACT
NTS NOT TO SCALE
PH PHASE
P PLUMBING CONTRACTOR
R&R REMOVE AND RELOCATE SURFACE
SR SURFACE PROTECTIVE DEVICE SURFACE RACEWAY
SFP SHIELDED TWISTED PAIR TELEPHONE
TV TELEVISION
UC UNDER COUNTER
UP UNDERGROUND PRIMARY ELECTRIC
US UNDERGROUND SECONDARY ELECTRIC
UT UNDERGROUND TELEPHONE
V VOLTS
W WALL MOUNTED
WG WIRE GUARD
WM WIREMOLD
WP WEATHERPROOF
WTR TRANSFORMER
XP EXPLOSION PROOF

DEVICES

- \$ SINGLE POLE SWITCH
\$W DUAL TECHNOLOGY WALL SWITCH OCCUPANCY SENSOR HUBBELL LIMITS
\$W DUAL TECHNOLOGY CEILING MOUNTED OCCUPANCY SENSOR HUBBELL QNNT DT-2000
Q LOWER CASE SUBSCRIPT INDICATES WHICH SWITCH SENSOR CONTROLS
Q DUPLEX RECEPTACLE
QF INDICATES COUNTER HEIGHT
QF INDICATES GROUND FAULT W/P INDICATES WEATHERPROOF TR TAMPER RESISTANT
DOUBLE DUPLEX RECEPTACLE
LINE VOLTAGE SINGLE POLE SWITCH
LINE VOLTAGE 3-WAY SWITCH
nLIGHT ON/OFF TOGGLE W/ DIMMING
nLIGHT POWER/RELAY PACK WITH 0-10V DIMMING

LIGHTING

- A - UPPER CASE SUBSCRIPT INDICATES LUMINAIRE TYPE
XX-XX - CIRCUIT NUMBER
a - LOWER CASE SUBSCRIPT INDICATES WHICH DEVICE CONTROLS LUMINAIRE
DRAWING NOTE INDICATOR
DRAWING NOTE INDICATOR
GROUND
LOW VOLTAGE WIRING
NORMAL LINE VOLTAGE WIRING
CONDUIT-RISE
CONDUIT-DROP
CIRCUIT BREAKER (TRIP RATING AS NOTED)

MISCELLANEOUS

- JUNCTION BOX WITH BLANK COVER
MOTOR CONNECTION
DISCONNECT SWITCH 30-AMP RATING 3=3 POLES 20=FUSE RATING (AMPS)
SURFACE PANELBOARD
PHOTOCELL
PADDLER FAN
HAND DRYER

CCTV/ SURVEILLANCE SYSTEM

- CCTV SURVEILLANCE CAMERA

CARD ACCESS/INTRUSION DETECTION

- INTRUSION DETECTION CONTROL PANEL
RECESSED DOOR CONTACT
SECURITY KEY PAD

EQUIPMENT TAGS

- AIR TO AIR HEAT EXCHANGER
SPLIT SYSTEM
CONDENSING UNIT
EXHAUST FAN
UNIT HEATER

NOTE: ABBREVIATION AND SYMBOL LISTING IS FOR REFERENCE ONLY; NOT ALL SYMBOLS MAY BE SHOWN AND/OR USED ON THESE DRAWINGS.

NOTE: ALL DEVICES, LUMINAIRES, EQUIPMENT, ETC., WITH NO NOTE BY SYMBOL ADJACENT TO IT, ARE NEW PROVIDED BY EC.



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DEMOLITION AND NEW CONSTRUCTION
AT
WHEELER PARK
FOR THE
COUNTY OF HUNTER
WEST STIMPSON AVE & ROUTE 1, LINDEN, NJ 07036

Table with 2 columns: No., Date, Issue or Revision. Contains drawing revision information.

Drawing Title

GENERAL NOTES & SYMBOL LIST

Table with 2 columns: Scale, USA Project No., Drawing Date, Drawing No., Drawn By, Checked By. Contains project and drawing details.

Strunk-Albert Engineering logo and contact information including address, phone, and website.

MSH MSH KRZ
drawn designed checked
drawing not valid without authorized user signature.
SAE Project No: WPS - 17516

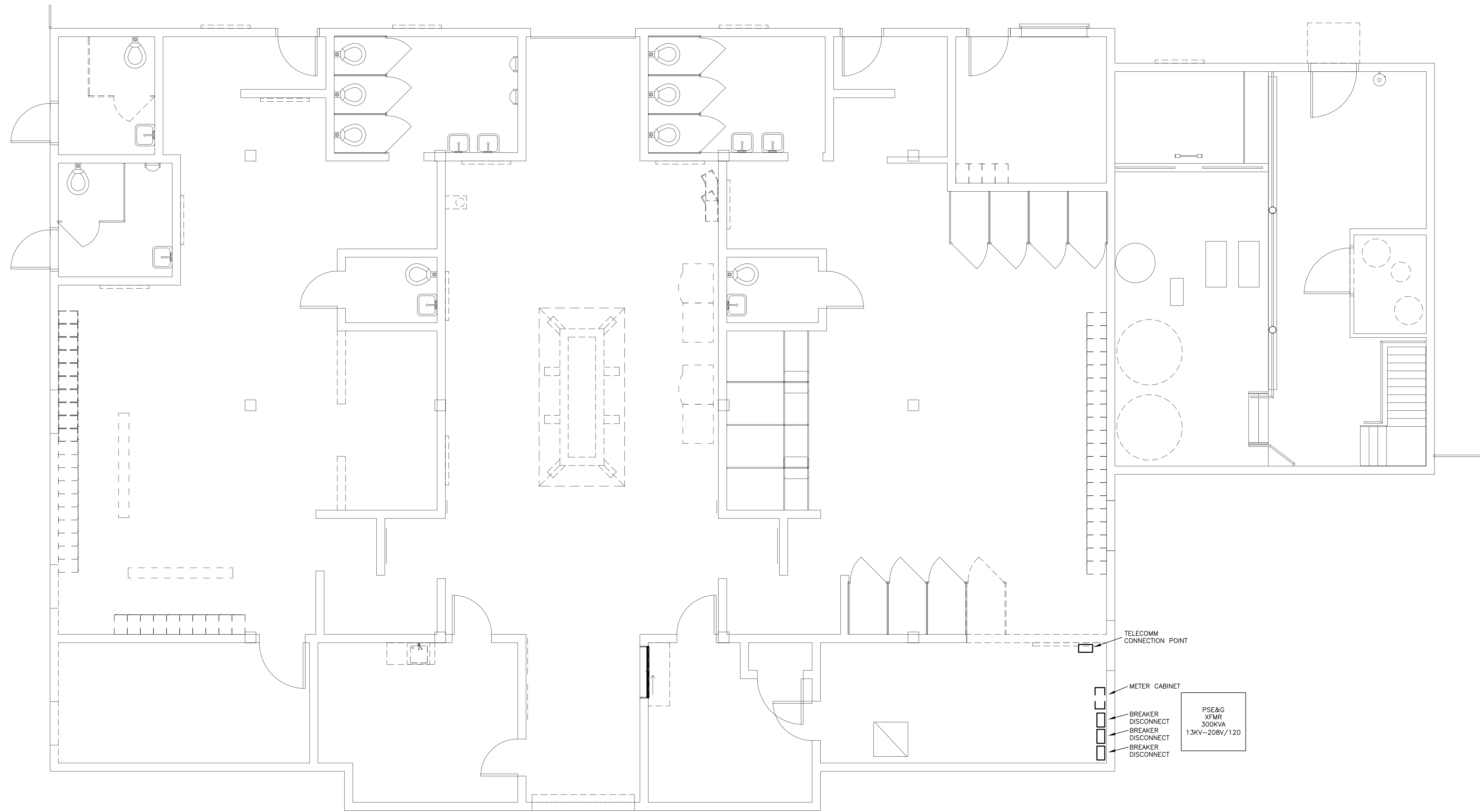
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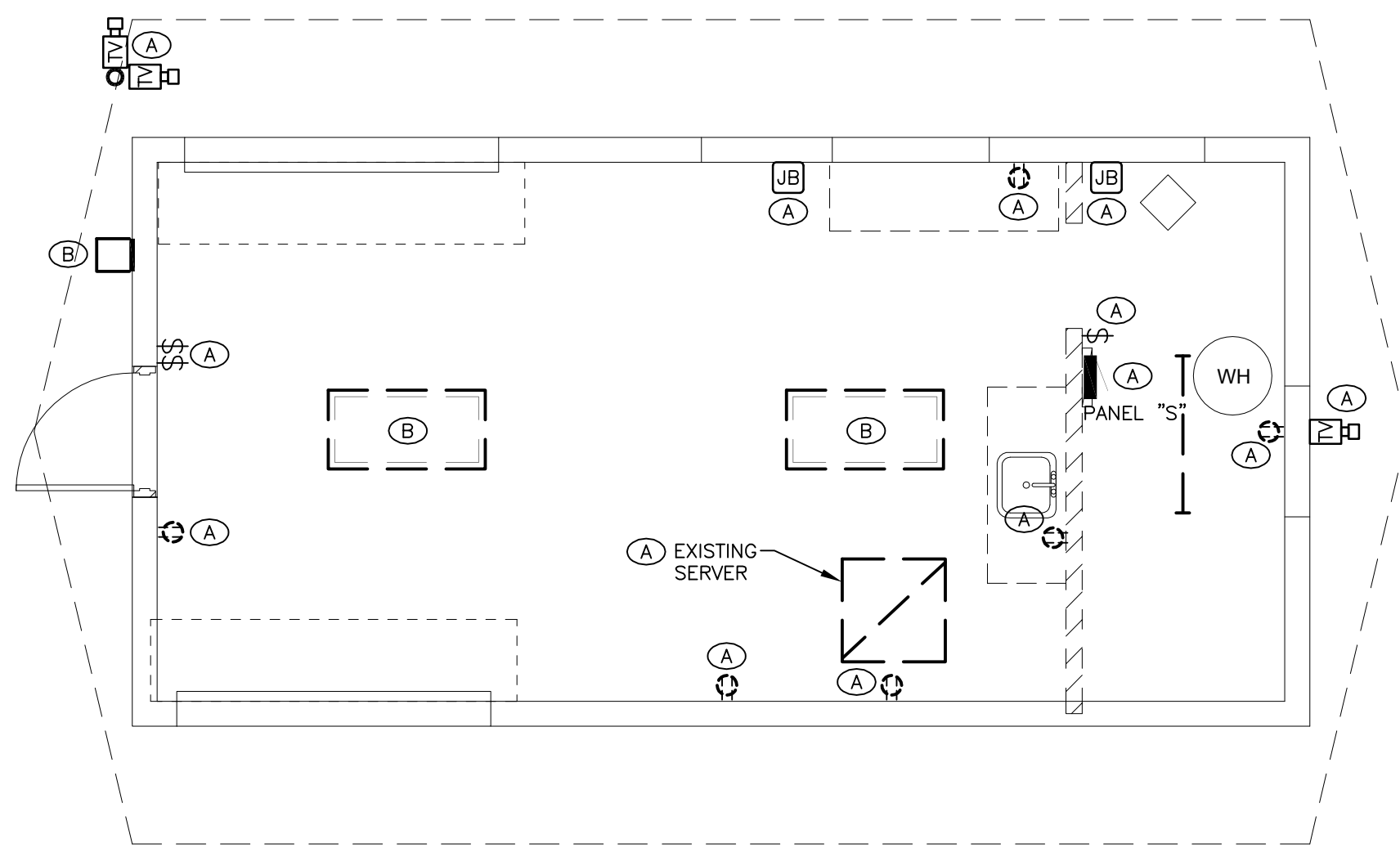
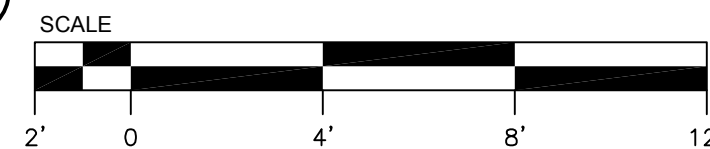
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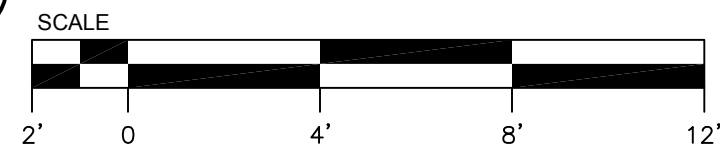


NOTE: EXISTING BUILDING WILL BE DEMOLISHED IN ITS ENTIRETY.

1 POOL HOUSE FLOOR PLAN - DEMOLITION



2 LIFEGUARD FLOOR PLAN - DEMOLITION



DRAWING NOTES BY SYMBOL - DEMOLITION

- (A) EXISTING TO BE REMOVED: DISCONNECT AND REMOVE EXISTING ITEM, BOX, CONDUIT AND WIRING MADE OBSOLETE BY THE RENOVATIONS. REMOVE EXISTING CONDUIT AND WIRING BACK TO SOURCE.
- (B) EXISTING LUMINAIRE TO BE REMOVED: DISCONNECT AND REMOVE EXISTING LUMINAIRE. DISCONNECT AND REMOVE EXISTING BOX, CONDUIT, AND WIRING BACK TO SOURCE.

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DEMOLITION AND NEW CONSTRUCTION

AT

WHEELER PARK

FOR THE

COUNTY OF UNION

WEST STIMPSON AVE & ROUTE 1, LINDEN, NJ 07036

1 09.26.17 BID SET

No. Date Issue or Revision

Drawing Title
POOL BUILDING AND LIFEGUARD HOUSE DEMOLITION PLANS - ELECTRICAL

Scale As indicated USA Project No. 2014-110

Drawing Date 09.26.17 Drawing No.

Drawn By MSH Checked By KRZ E-050



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1 09.26.17 BID SET
No. Date Issue or Revision

Drawing Title

FLOOR PLANS - LIGHTING & POWER

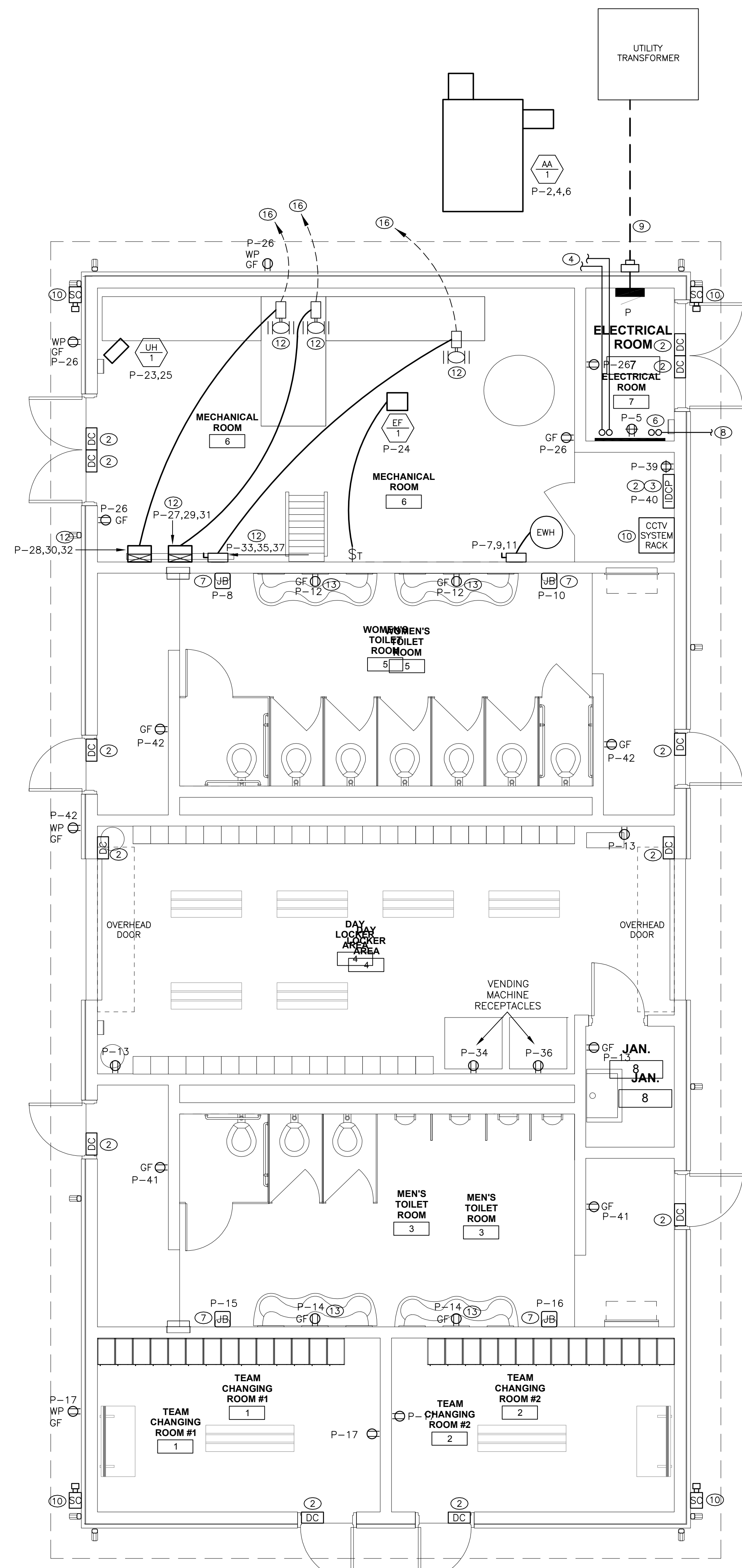
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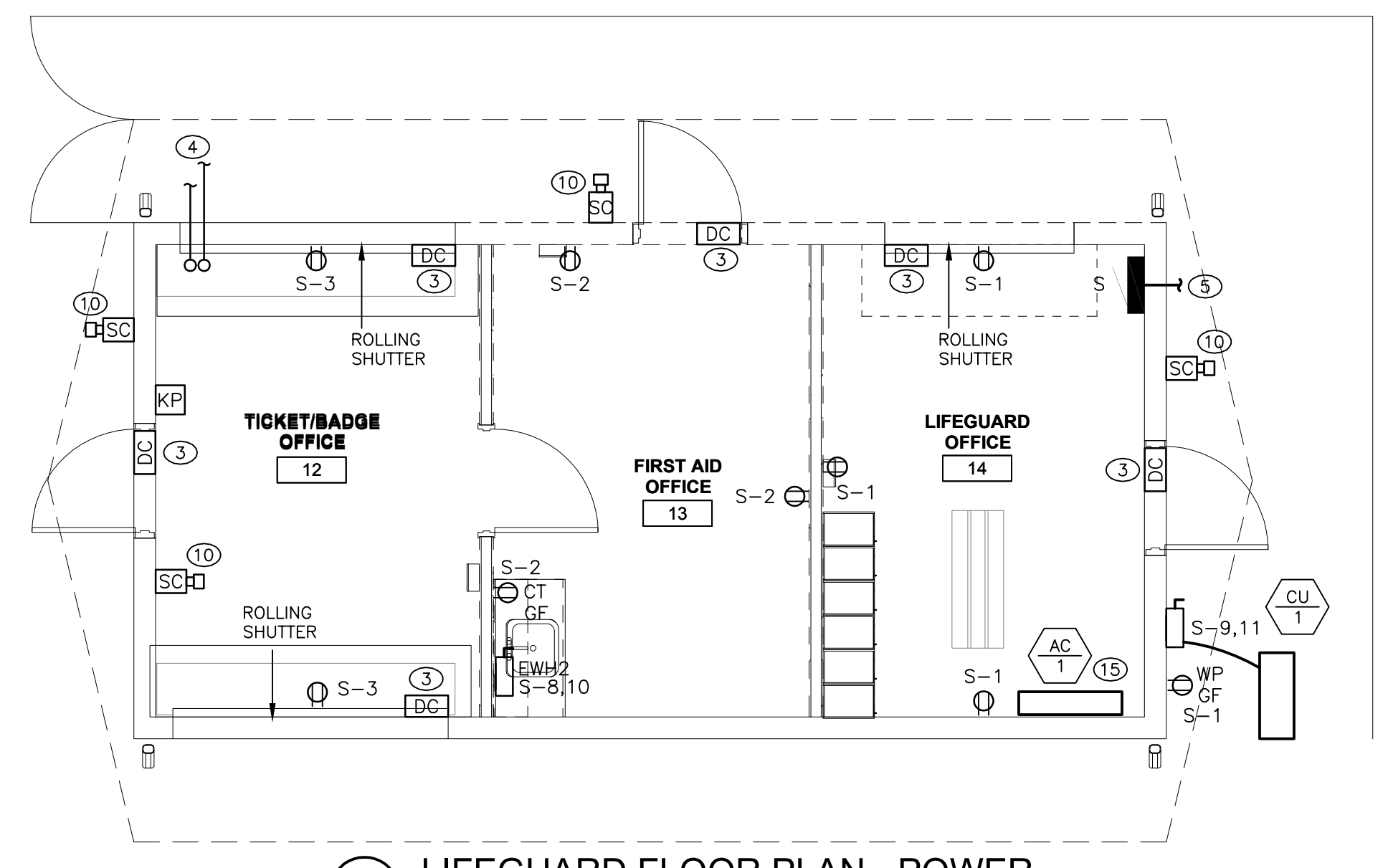
Drawn By MSH Checked By KRZ E-100

DRAWING NOTES BY SYMBOL - NEW WORK

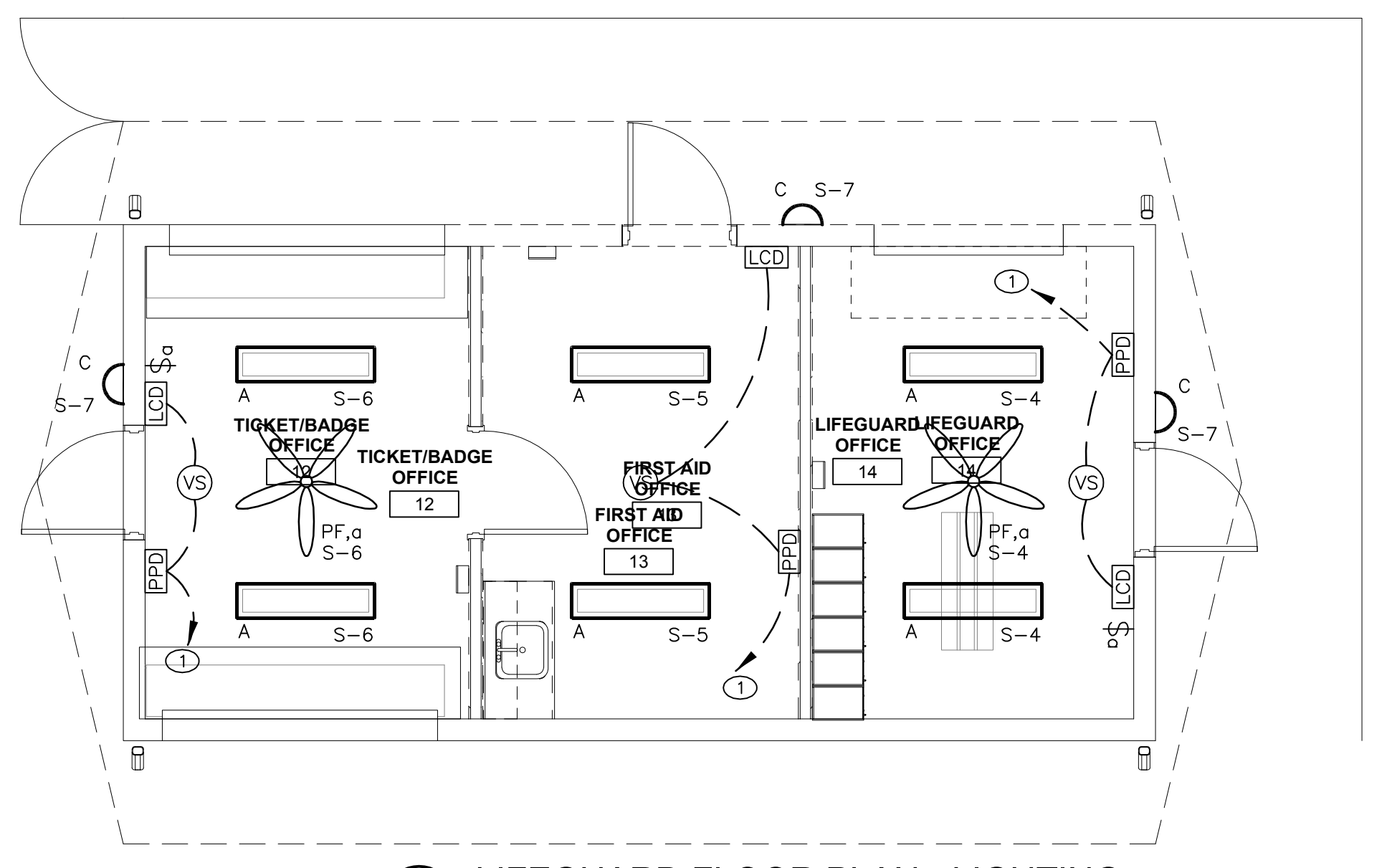
- 1 REFER TO LIGHTING CONTROL WIRING DIAGRAMS.
- 2 INSTALL RECESSED MOUNTED DOOR CONTACTS IN DOOR FRAMES. RUN WIRING IN RACEWAY THROUGH WALLS AND ABOVE CEILINGS TO SECURITY SYSTEM PANEL IN ELECTRICAL ROOM.
- 3 INSTALL RECESSED MOUNTED DOOR CONTACT IN DOOR FRAMES. RUN WIRING IN RACEWAY AND THROUGH UNDERGROUND CONDUIT BETWEEN BUILDINGS TO SECURITY SYSTEM PANEL IN ELECTRICAL ROOM.
- 4 TELEPHONE/COMMUNICATIONS CONDUITS BETWEEN BUILDINGS: PROVIDE (2) 4" SCH. 40 PVC UNDERGROUND CONDUITS WITH PULL STRINGS BETWEEN LIFEGUARD BUILDING AND MAIN ELECTRICAL ROOM. STUB CONDUITS 18" A.F.F. AT BOTH LOCATIONS. COORDINATE EXACT LOCATION WITH OWNER.
- 5 UNDERGROUND FEEDER FROM POWER PANEL 'P'. REFER TO PANEL SCHEDULE AND RISER DIAGRAM.
- 6 TELEPHONE/COMMUNICATIONS SERVICE CONDUITS WITH PULL STRINGS 18" A.F.F. PROVIDE 3/4"x4"x4" PAINTED TREATED CDX PLYWOOD BACKBOARD FOR EQUIPMENT. COORDINATE EXACT LOCATION WITH OWNER. CABLING PROVIDED BY UTILITY COMPANY.
- 7 HAND DRYER: PROVIDE CONDUIT AND WIRING, AS PER PANEL SCHEDULE, FROM PANEL INDICATED TO HAND DRYER. PROVIDE FINAL ELECTRICAL CONNECTION TO HAND DRYER AS REQUIRED. COORDINATE ALL WORK WITH HAND DRYER INSTALLER.
- 8 PROPOSED UNDERGROUND ROUTE FOR COMMUNICATIONS SERVICE.
- 9 PROPOSED UNDERGROUND ROUTE FOR ELECTRIC SERVICE FROM METER BASE TO UTILITY TRANSFORMER.
- 10 CCTV CAMERA LOCATION: PROVIDE 1-1/2" CONDUIT FROM CCTV RACK IN ELECTRICAL ROOM TO EACH CAMERA LOCATION. CAMERAS TO BE PROVIDED UNDER SEPARATE CONTRACT BY OWNER. COORDINATE EXACT CAMERA LOCATION WITH OWNER PRIOR TO ROUGH-IN.
- 11 EXTERIOR LIGHTING: PROVIDE CIRCUIT TO/BETWEEN ALL SITE LUMINAIRE. REFER TO CIVIL DRAWINGS FOR LUMINAIRE LAYOUT AND DETAILS. REFER TO EXTERIOR LIGHTING CONTROL DIAGRAMS.
- 12 PROVIDE POWER CIRCUIT, AS INDICATED, TO SPRAY PARK EQUIPMENT. PROVIDE FINAL CONNECTION BETWEEN WFO/STARTER AND MOTOR. REFER TO PANEL SCHEDULE FOR WIRE AND CONDUIT SIZES. REFER TO ARCHITECTURAL DRAWINGS FOR SPRAY PARK EQUIPMENT AND INFORMATION.
- 13 LAVATORY: PROVIDE GFI RECEPTACLE. PROVIDE CONDUIT AND WIRING, AS PER PANEL SCHEDULE, FROM PANEL TO/BETWEEN LAVATORY RECEPTACLES. COORDINATE ALL WORK WITH LAVATORY INSTALLER. REFER TO PLUMBING DRAWINGS FOR ADDITIONAL INFORMATION.
- 14 PAVILION LIGHTING: PROVIDE CIRCUIT TO PAVILION LUMINAIRE.
- 15 SPLIT SYSTEM: PROVIDE CONDUIT AND WIRING, AS REQUIRED BY MANUFACTURER, FROM OUTDOOR CONDENSING UNIT TO INDOOR UNIT. INDOOR UNIT TO BE POWERED FROM OUTDOOR UNIT. COORDINATE ALL WORK WITH SPLIT SYSTEM INSTALLER.
- 16 SPRAY PARK EQUIPOTENTIAL BONDING. SEE DETAILS ON SHEET E-500.



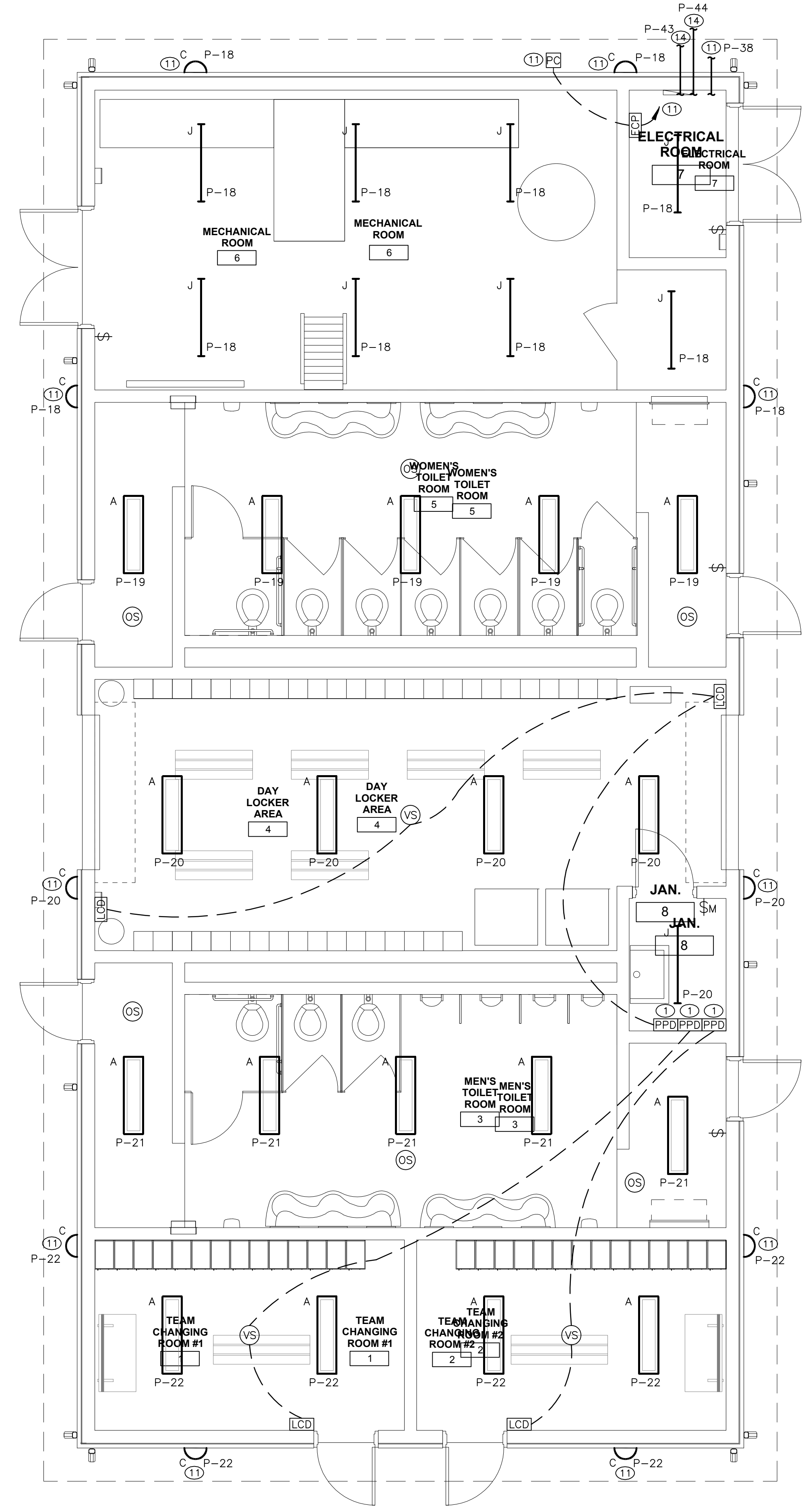
1 FLOOR PLAN - POWER
SCALE
2' 0' 4' 8' 12'



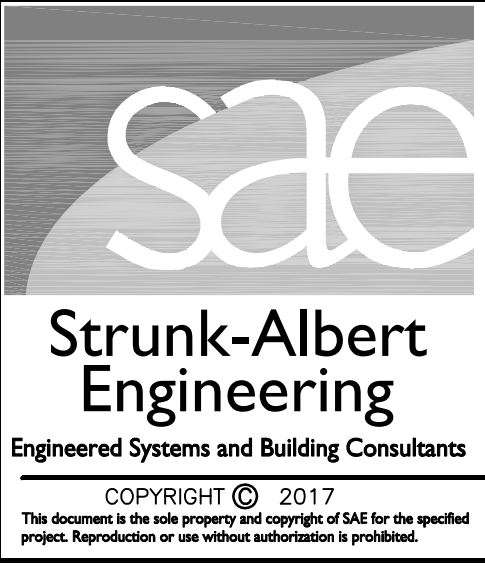
3 LIFEGUARD FLOOR PLAN - POWER
SCALE
2' 0' 4' 8' 12'



4 LIFEGUARD FLOOR PLAN - LIGHTING
SCALE
2' 0' 4' 8' 12'

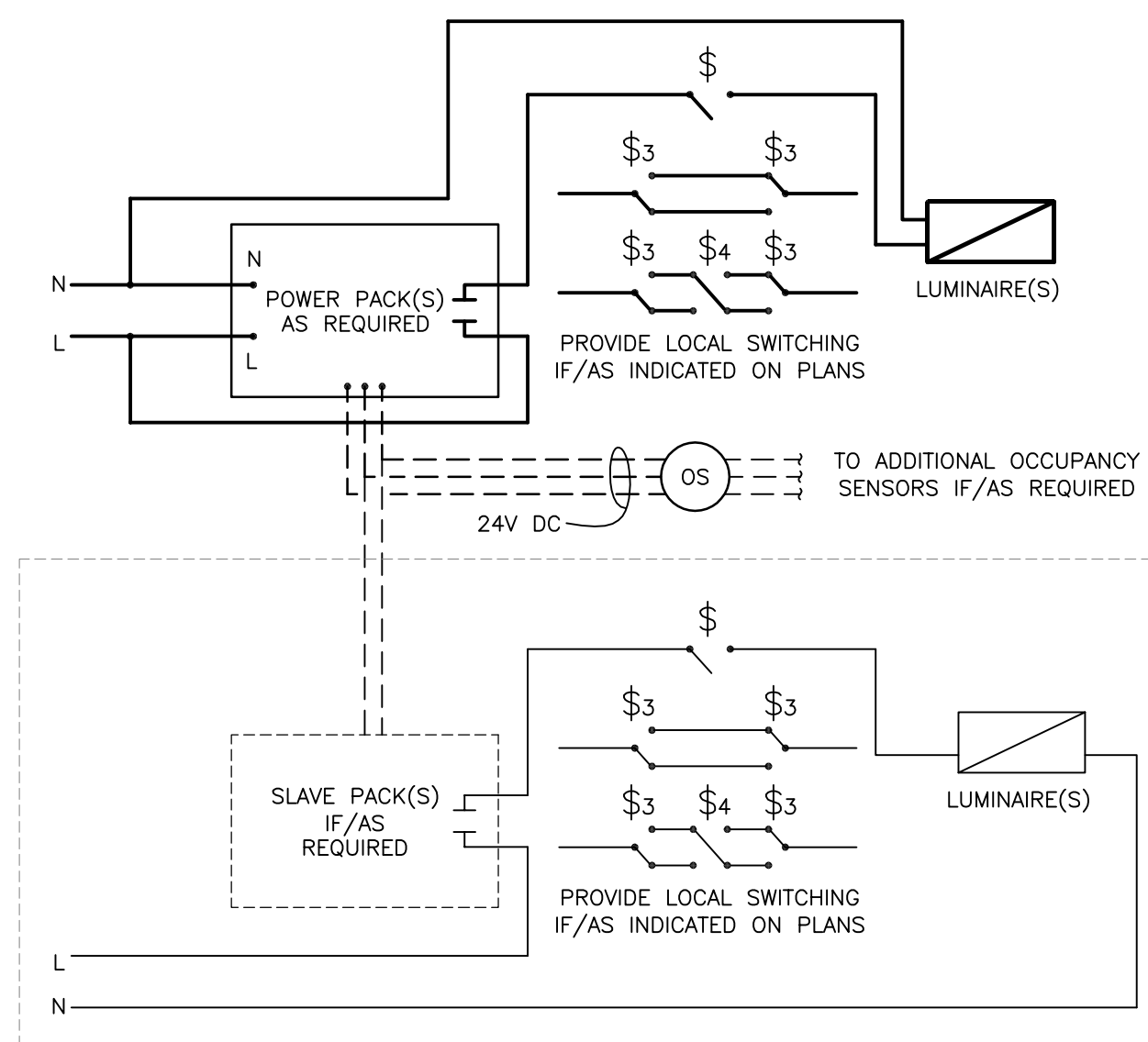


2 FLOOR PLAN - LIGHTING
SCALE
2' 0' 4' 8' 12'



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TYPICAL WIRING DIAGRAM - EXACT WIRING MAY VARY DEPENDING ON MANUFACTURER AND MODEL USED, AND ON ROOM LAYOUT - WIRE AS PER MANUFACTURER'S INSTRUCTIONS

1 TYPICAL CEILING MOUNTED OCCUPANCY SENSOR CONTROL WIRING

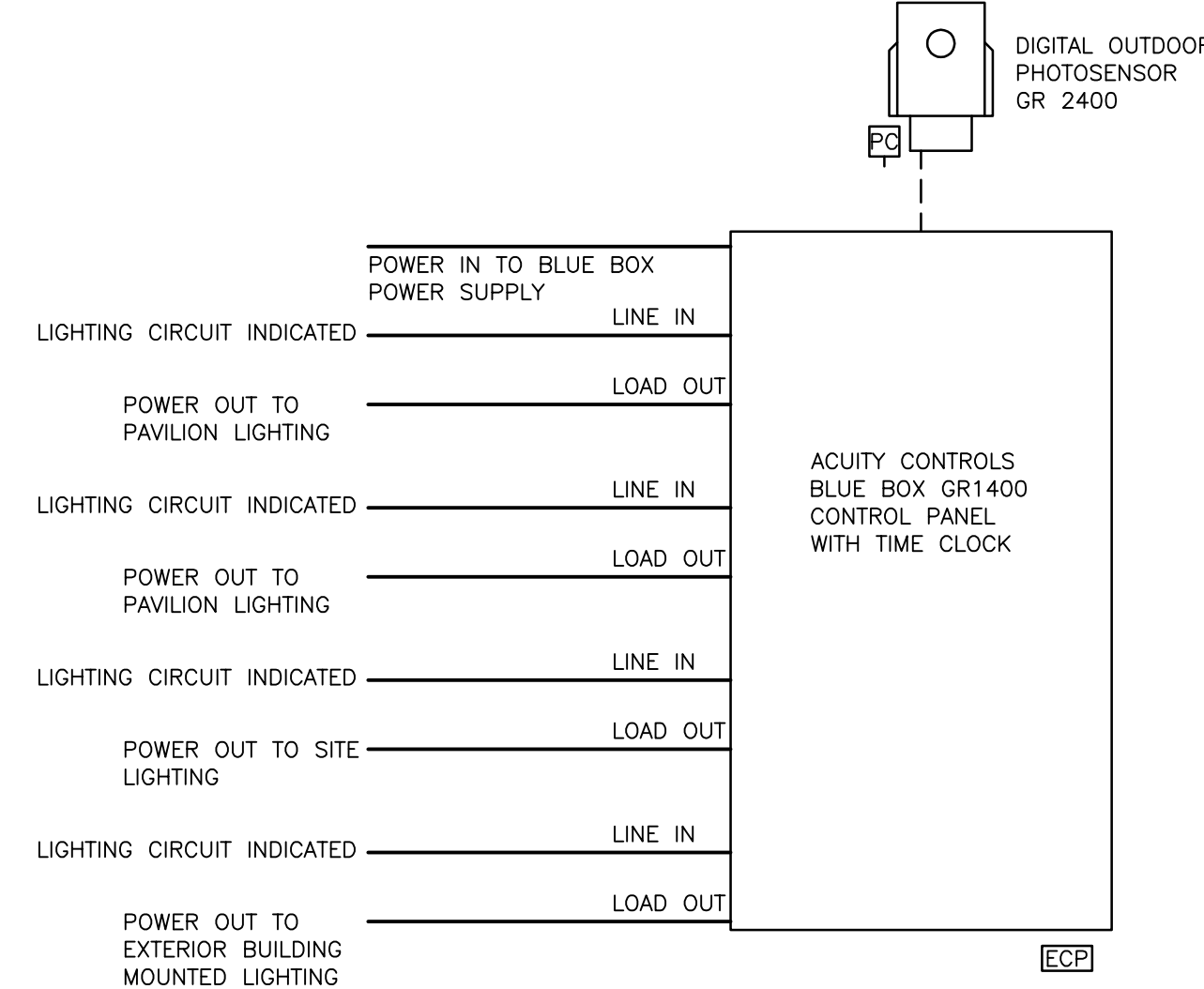
NO SCALE

NOTES:

1. ALL SENSOR LOCATIONS AND QUANTITIES ARE APPROXIMATE, REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS PRIOR TO INSTALLATION.
2. SENSORS SHALL BE DUAL-TECHNOLOGY PIR/ULTRASONIC. OCCUPANCY SENSORS MAY BE LUTRON "LOS-C" SERIES, HUBBELL "OMNI-DT" SERIES, WATT STOPPER "DT-300" SERIES, LEVITON "OSQ" SERIES, OR APPROVED EQUALS. PROVIDE ALL COMPONENTS NEEDED FOR A COMPLETE, FUNCTIONING SYSTEM. PROVIDE OCCUPANCY SENSORS IN QUANTITIES AND COVERAGE PATTERNS AS REQUIRED. PROVIDE ALL REQUIRED POWER, SLAVE AND/OR AUXILIARY RELAY PACKS. PROVIDE POWER, SLAVE AND RELAY PACKS TO MATCH LUMINAIRE VOLTAGE. PROVIDE ALL WIRING AND INTERCONNECTION.
3. SENSORS MOUNTED OVER DOORS MUST BE PLACED A MINIMUM OF ONE FOOT INSIDE THE THRESHOLD. CEILING MOUNT SENSORS SHOULD BE LOCATED A MINIMUM OF SIX FEET FROM ANY HVAC SUPPLY/RETURN GRILLES/ DIFFUSERS. COORDINATE LOCATIONS WITH EXISTING HVAC.
4. CONTRACTOR IS RESPONSIBLE FOR PROPER SENSITIVITY AND TIME DELAY SETTINGS, AND FOR RECOMMENDED PLACEMENT. UNLESS OTHERWISE DIRECTED BY OWNER, ALL SENSOR TIMERS SHALL INITIALLY BE SET TO 30 MINUTES.
5. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF REQUIRED NUMBER OF POWER AND/OR SLAVE PACK(S).
6. IF MULTIPLE CIRCUITS ARE TO BE CONTROLLED BY A SENSOR, AN AUXILIARY SLAVE/RELAY MUST BE USED IN CONJUNCTION WITH THE POWER PACK.
7. WHERE MULTIPLE CIRCUITS ARE TO BE CONTROLLED, AND ONE IS A NORMAL/EMERGENCY CIRCUIT, PROVIDE POWER TO THE OCCUPANCY SENSOR FROM THE NORMAL/EMERGENCY CIRCUIT.
8. WIRING AND INTERCONNECTION SHOWN IS DIAGRAMMATIC, AND MAY VARY DUE TO MANUFACTURER/MODEL NUMBERS UTILIZED. PROVIDE ALL WIRING AND INTERCONNECTION AS PER MANUFACTURER'S INSTRUCTIONS.

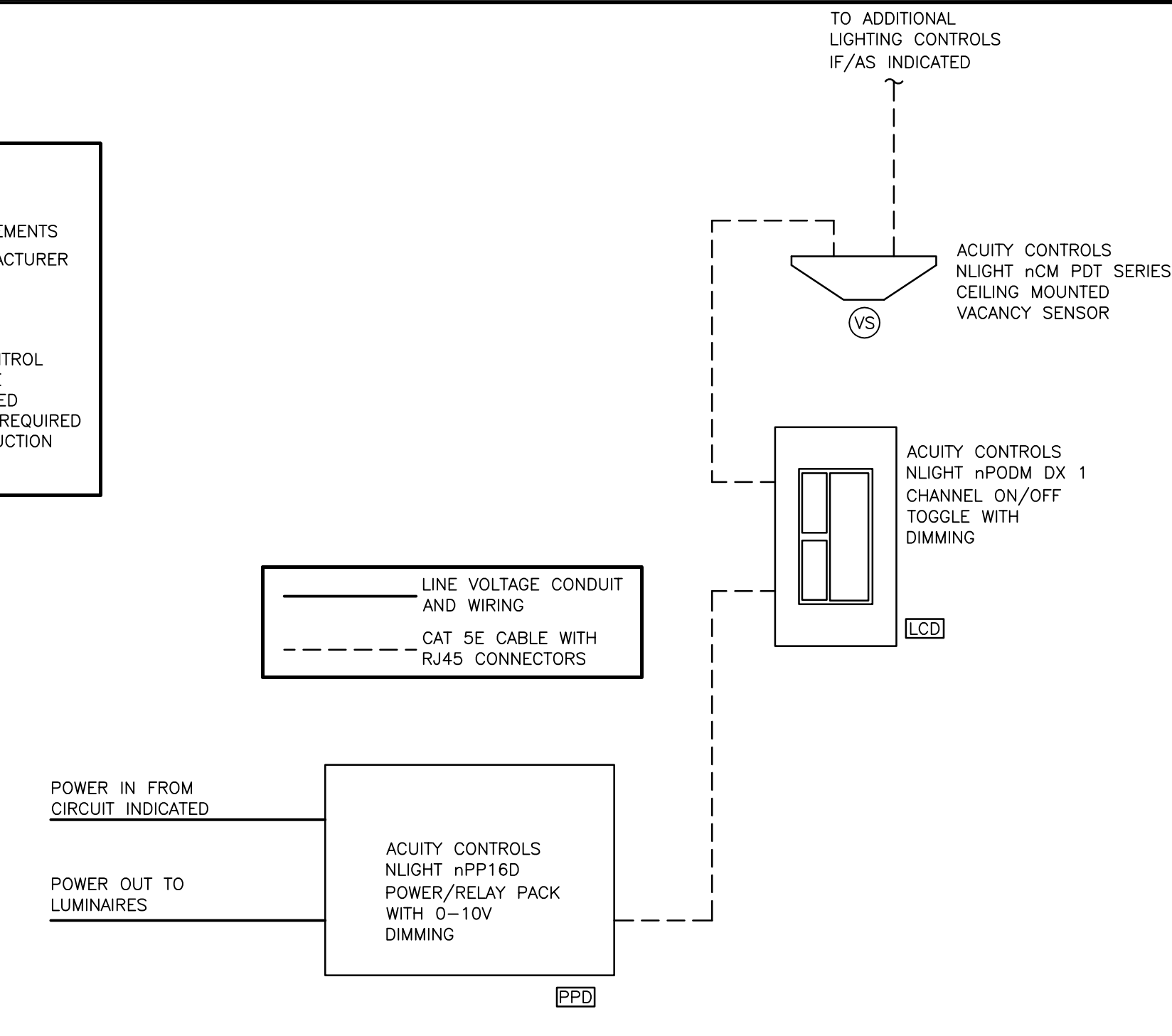
LIGHTING CONTROL SYSTEM NOTES:

- ALL WIRING SHALL BE AS PER MANUFACTURER REQUIREMENTS
- QUANTITIES OF ALL DEVICES SHALL BE AS PER MANUFACTURER REQUIREMENTS/RECOMMENDATIONS
- ALL INSTALLATIONS SHALL BE AS PER MANUFACTURER REQUIREMENTS
- SYSTEM DESIGN AND LAYOUT IS BASED ON ACUITY CONTROL NIGHT SYSTEM. IF SYSTEM IS SUBSTITUTED, IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ALL REQUIRED COMPONENTS, SOFTWARE AND NETWORK CONNECTIONS REQUIRED SO THAT SYSTEM OPERATES AS INDICATED ON CONSTRUCTION DOCUMENTS



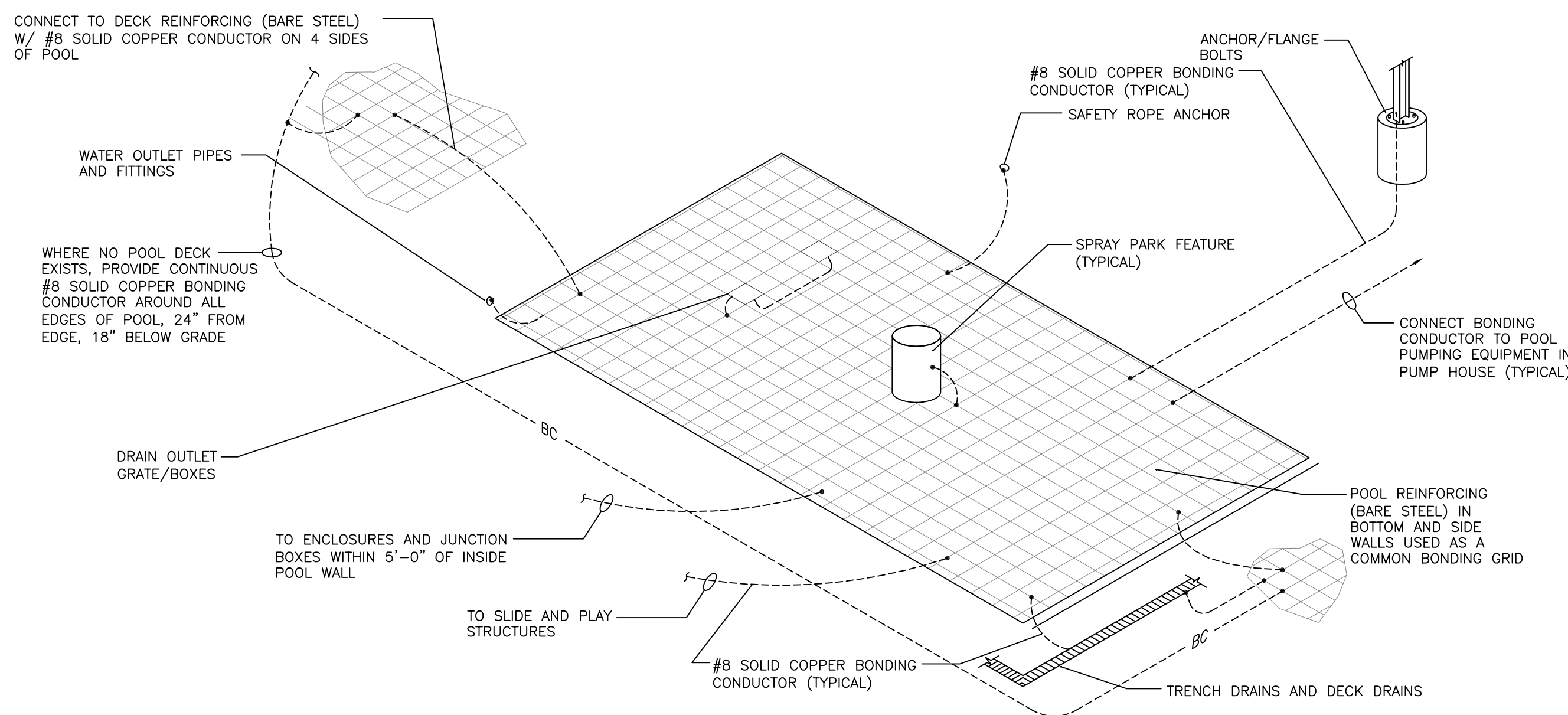
2 EXTERIOR LIGHTING CONTROL WIRING DIAGRAM

NO SCALE



3 LIGHTING CONTROL WIRING DIAGRAM

NO SCALE



4 SPRAY PARK EQUIPOTENTIAL BONDING DETAIL

NO SCALE

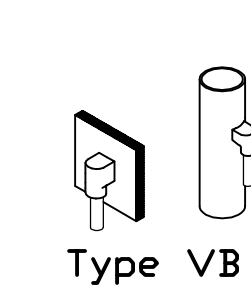
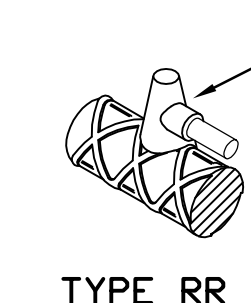
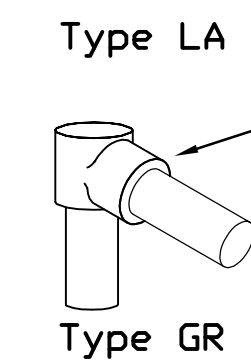
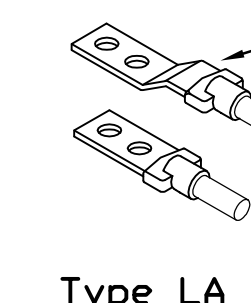
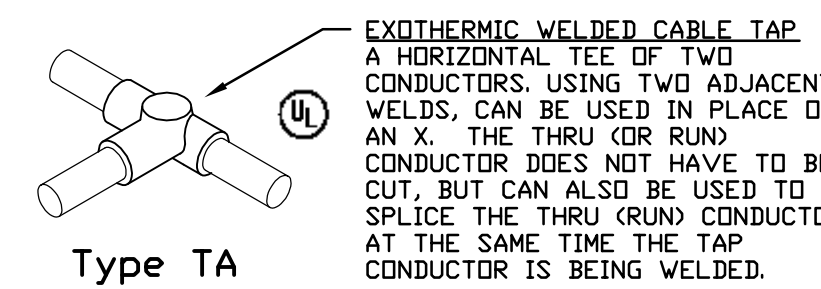
EQUIPOTENTIAL BONDING SYSTEM FOR SPRAY PARKS

- GENERAL NOTES:
- THE INTENT OF THE WORK IS TO MEET ALL REQUIREMENTS OF 2014 NATIONAL ELECTRIC CODE ARTICLE 680.29 "EQUIPOTENTIAL BONDING FOR SWIMMING POOL INSTALLATIONS".
 - SLIDES, TUBES AND WATER ATTRACTIONS CONSTRUCTED WITH FIBERGLASS, VINYL, OR PVC ARE CONSIDERED "NON-CONDUCTIVE" AND DO NOT REQUIRE EQUIPOTENTIAL BONDING.
 - SCHEDULE INSPECTION AND OBTAIN APPROVAL OF LOCAL ELECTRICAL AHI PRIOR TO COVERING ANY BONDING CONNECTION.

1. THE SPRAY PARK SHELL SHALL BE CONSTRUCTED WITH STRUCTURAL REINFORCED CONCRETE TO FORM A CONDUCTIVE SHELL.
 - THE STRUCTURAL REINFORCING SHALL CONSIST OF UNCOATED STEEL REBARS BONDED TOGETHER WITH METAL TIE WIRES. THE REINFORCEMENT GRID SHALL FORM THE BASIC EQUIPOTENTIAL GRID. THE CONCRETE SURFACE IS CONSIDERED CONDUCTIVE.
 - ALL BONDING CONNECTIONS TO THE STEEL REBARS SHALL BE MADE USING APPROVED UL-LISTED EXOTHERMIC WELDED CONNECTIONS OR DIRECT-BURIAL GROUNDING CLAMPS.
2. ALL PERIMETER SURFACE AREAS WITHIN 3 FEET HORIZONTALLY OF SPRAY PARK SHALL INCLUDE EQUIPOTENTIAL BONDING.
 - IF THE SURFACE AREA IS CONCRETE, THE REINFORCING SHALL BE BONDED TO THE MAIN SPRAY PARK SHELL.
 - IF THE SURFACE DOES NOT INCLUDE STEEL REINFORCING OR IS UNPAVED (GRASS, STONE, LANDSCAPE MULCH, ETC.) THEN PROVIDE A SINGLE CONTINUOUS BARE DIRECT-BURIED #8 AWG SOLID COPPER CONDUCTOR RUNNING 18 TO 24 INCHES FROM THE POOL EDGE AND 5 INCHES BELOW THE SURFACE. BOND THE CONDUCTOR TO THE POOL SHELL WHERE INDICATED, OR SPACED AT 50' O.C. AROUND THE POOL PERIMETER.
3. ALL FIXED-IN-PLACE METAL ITEMS WITHIN 5 FEET HORIZONTALLY FROM THE SPRAY PARK EDGE SHALL BE BONDED TO THE REINFORCING STEEL GRID, OR TO EACH OTHER, USING A BARE #8 AWG SOLID COPPER BONDING CONDUCTOR. THIS INCLUDES:
 - METAL LADDERS, PLATFORMS, LIFE-GUARD CHAIRS, DECORATIVE POSTS, ETC.
 - METAL FENCES AND FENCE POSTS
 - METAL FITTINGS WITHIN OR ATTACHED TO THE POOL SHELL. THIS INCLUDES METAL COPING COVERS, GUTTERS, DRAIN BOXES AND PIPE GRATES.
 - ELECTRICAL EQUIPMENT OR CABINETS, LIGHT FIXTURE POLES, OTHER ENERGIZED EQUIPMENT
 - ANY ISOLATED METAL PARTS LESS THAN 4 INCHES IN ANY DIRECTION AND WHICH DO NOT PENETRATE THE SPRAY PARK SHELL MORE THAN 1 INCH DO NOT REQUIRE BONDING.
4. PROVIDE A #8 AWG SOLID COPPER BONDING CONDUCTOR CONNECTED TO THE SPRAY PARK SHELL AND RUN TO THE INDICATED POOL EQUIPMENT ROOM. RUN CONDUCTOR IN 3/4 INCH SCHED 40 PVC UNDERGROUND FOR PROTECTION. ATTACH THE BOND CONDUCTOR TO EACH PUMP AND OTHER ELECTRICAL EQUIPMENT CONNECTED TO THE SPRAY PARK WATER SYSTEM
5. METAL SHELL AND MOUNTING BRACKET OF 'NO-NICHE' UNDERWATER LIGHT FIXTURES SHALL BE BONDED TO THE SPRAY PARK SHELL REBAR USING A BARE #8 AWG SOLID CU COPPER BONDING CONDUCTOR
6. BOND WATER PUMPS, FILTERS AND OTHER ELECTRICAL SPRAY PARK EQUIPMENT WITH A #8 AWG SOLID COPPER BONDING CONDUCTOR. REFER TO DETAIL 6 ON DWG. E-500.

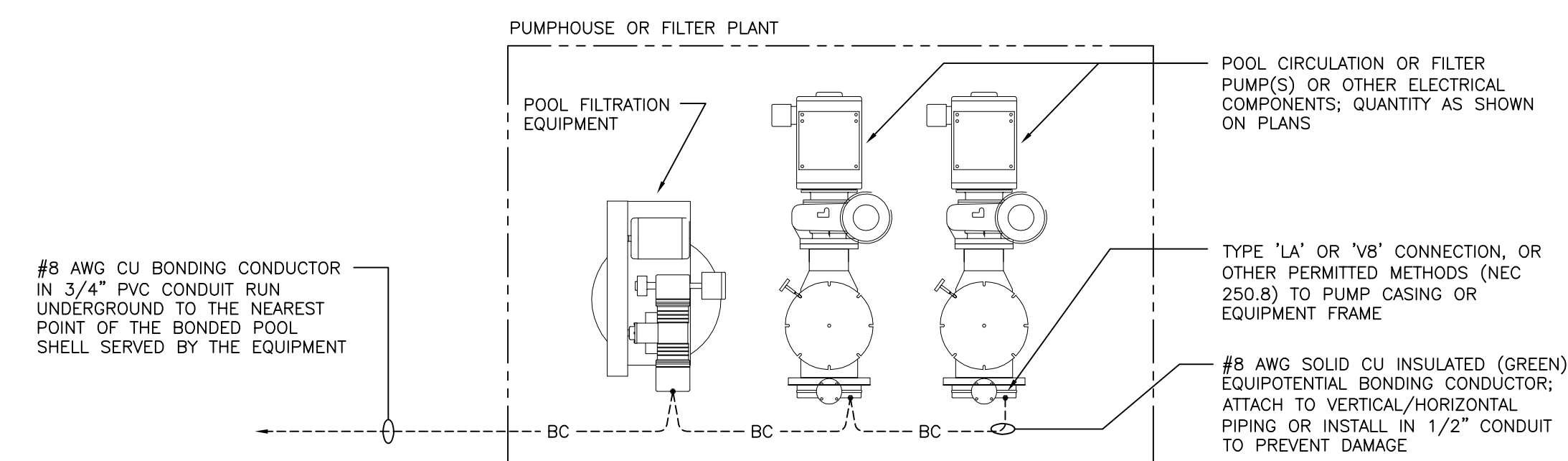
BONDING NOTES

1. ALL WORK SHALL COMPLY WITH 2014 NATIONAL ELECTRIC CODE ARTICLE 680. BONDING WORK SHALL COMPLY WITH 680.26.
2. DETAIL INDICATES TYPICAL CONSTRUCTION AND BONDING ITEMS. REFER TO POOL CONSTRUCTION DRAWINGS FOR ACTUAL STRUCTURE, DECK, DRAINS AND APPURTENANCES.
3. ALL METAL POOL FITTINGS LARGER THAN 4" IN ANY DIMENSION OR WHICH PENETRATE INTO THE POOL STRUCTURE MORE THAN 1" SHALL BE BONDED.
4. CONTRACTOR SHALL SUBMIT LETTER AS PART OF CLOSE OUT DOCUMENTS TO OWNER CERTIFYING BONDING IS INSTALLED PER NEC ART. 680-26.



5 BONDING CONNECTION DETAILS

NO SCALE



6 POOL EQUIPMENT BONDING DETAIL

NO SCALE

- REFER TO NEC 680.26 (6)



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DEMOLITION AND NEW CONSTRUCTION
AT
WHEELER PARK
FOR THE
COUNTY OF UNION
WEST STIMPSON AVE & ROUTE 1, LINDEN, NJ 07036

No.	Date	Issue or Revision
1	09.26.17	ISS SET
Drawing Title		
DETAILS		
Scale	As indicated	USA Project No. 2014-110
Drawing Date	09.26.17	Drawing No.
Drawn By	MSH	Checked By
		E-500

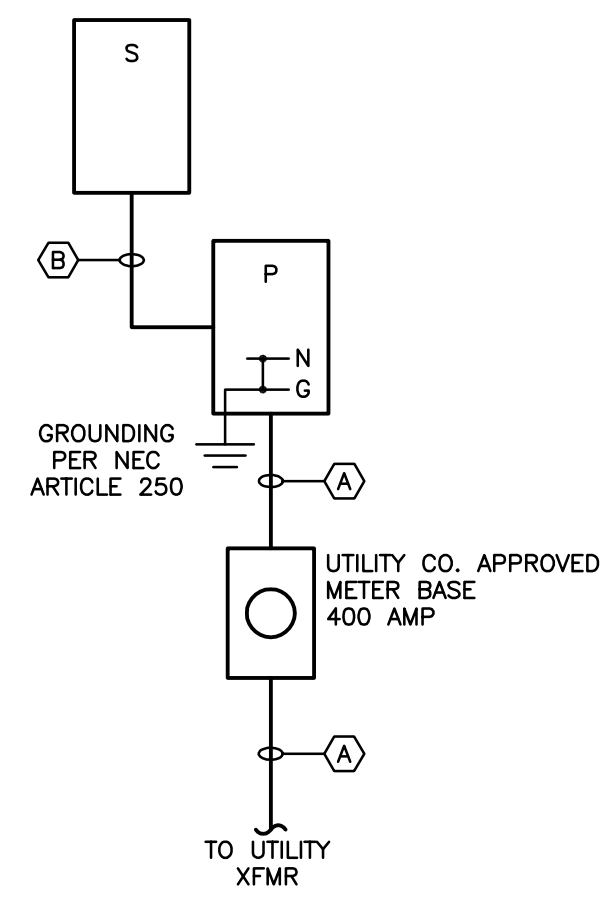
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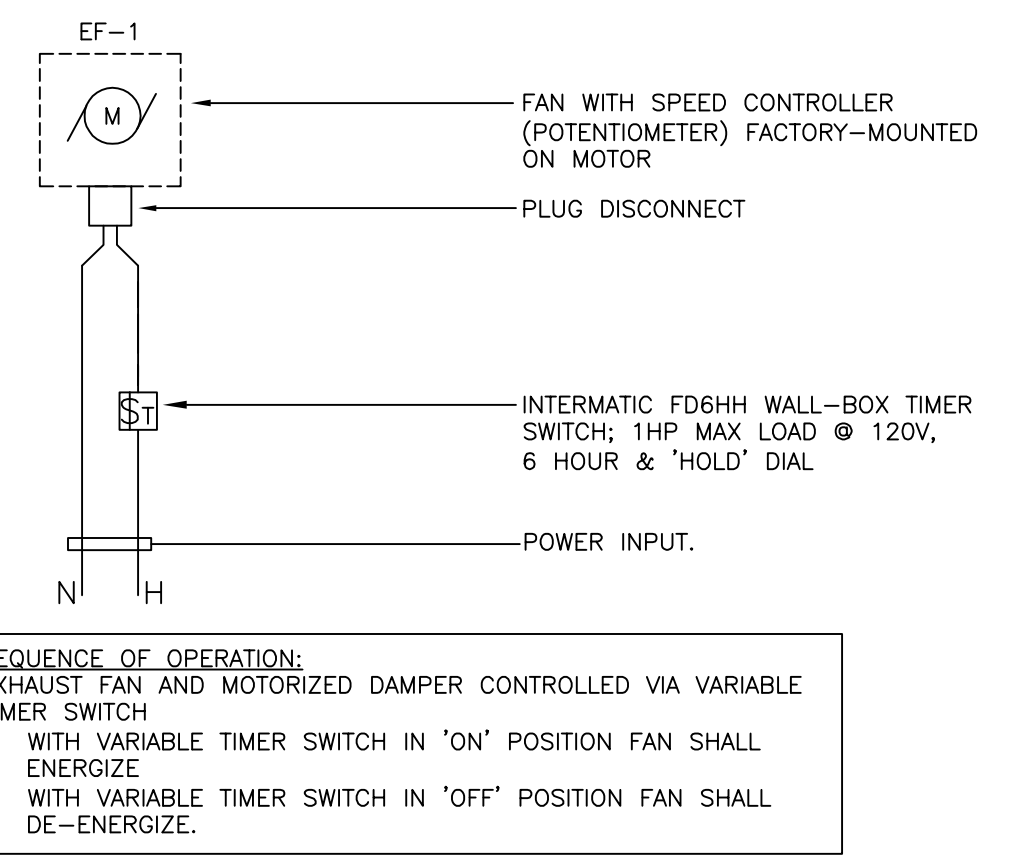
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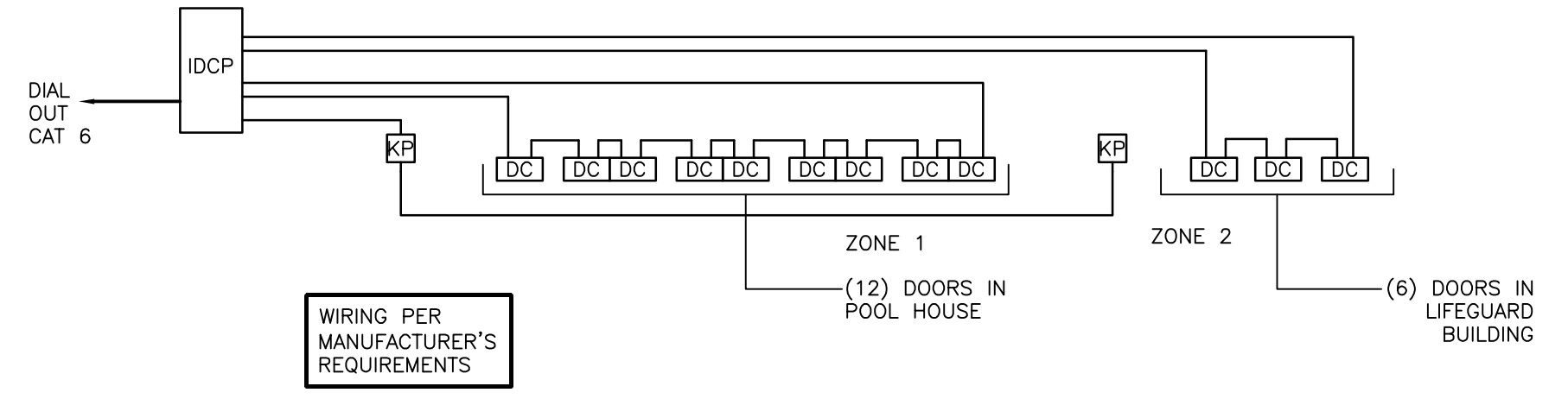
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SAE Project No: WPS - 17516



1 ELECTRIC RISER DIAGRAM
NO SCALE



2 EXHAUST FAN WIRING SCHEMATIC
NO SCALE



3 INTRUSION SECURITY SYSTEM DIAGRAM
NO SCALE

PANEL: P MAIN BKR 400 BUS AMPS 400 FED FROM UTILITY VOLTS: 208Y/120V 3P 4W
NEUTRAL: 100% MOUNTING SURFACE LUGS: FEEDTHRU LOCATION: ELEC. RM

DKT #	AMPS / P	LOAD KVA	RACEWAY / CONDUCTORS	CIRCUIT DESCRIPTION	DKT #	AMPS / P	LOAD KVA	RACEWAY / CONDUCTORS	CIRCUIT DESCRIPTION
1	100/2	8.44	1-1/4"C,2#2,#2N,#8G	PANEL S	2	90/3	25.3	1-1/4"C,3#2,#8G	AA-1
3	20/1	0.6	3/4"C,1#12,#12N,#12G	RECEPTACLE	4	6			
5	50/3	12	3/4"C,3#6,#10G	EW1	6				
7					8	20/1	1.2	3/4"C,1#12,#12N,#12G	HAND DRYER
9					10	20/1	1.2	3/4"C,1#12,#12N,#12G	HAND DRYER
11					12	20/1	0.36	3/4"C,1#12,#12N,#12G	RECEPTACLE
13	20/1	0.54	3/4"C,1#12,#12N,#12G	RECEPTACLE	14	20/1	0.36	3/4"C,1#12,#12N,#12G	RECEPTACLE
15	20/1	1.2	3/4"C,1#12,#12N,#12G	HAND DRYER	16	20/1	1.2	3/4"C,1#12,#12N,#12G	HAND DRYER
17	20/1	0.54	3/4"C,1#12,#12N,#12G	RECEPTACLE	18	20/1	0.48	3/4"C,1#12,#12N,#12G	LIGHTING
19	20/1	0.25	3/4"C,1#12,#12N,#12G	LIGHTING	20	20/1	0.29	3/4"C,1#12,#12N,#12G	LIGHTING
21	20/1	0.25	3/4"C,1#12,#12N,#12G	LIGHTING	22	20/1	0.28	3/4"C,1#12,#12N,#12G	LIGHTING
23	20/2	3.02	3/4"C,2#12,#12G	UH-1	24	20/1	0.12	3/4"C,1#12,#12N,#12G	EF-1
25					26	20/1	0.9	3/4"C,1#12,#12N,#12G	RECEPTACLE
27	70/3	17.5	1"C,3#4,#8G	SPRAY PUMP	28	70/3	17.5	1"C,3#4,#8G	SPRAY PUMP
29					30				
31					32				
33	30/3	6.32	3/4"C,3#10,#10G	SPRAY PUMP	34	20/1	0.18	3/4"C,1#12,#12N,#12G	VENDING MACHINE
35					36	20/1	0.18	3/4"C,1#12,#12N,#12G	VENDING MACHINE
37					38	20/1	1.9	3/4"C,1#12,#12N,#12G	SITE LIGHTING
39	20/1	0.6	3/4"C,1#12,#12N,#12G	RECEPTACLE	40	20/1	0.2	3/4"C,1#12,#12N,#12G	INTRUSION DETECTION CONTROL PANEL
41	20/1	0.36	3/4"C,1#12,#12N,#12G	RECEPTACLE	42	20/1	0.54	3/4"C,1#12,#12N,#12G	RECEPTACLE
43	20/1	0.5	3/4"C,1#12,#12N,#12G	PAVILION LIGHTS	44	20/1	0.5	3/4"C,1#12,#12N,#12G	PAVILION LIGHTS
45	20/1	0		SPARE	46	20/1	0		SPARE
47	20/1	0		SPARE	48	20/1	0		SPARE
49	20/1	0		SPARE	50	20/1	0		SPARE
51	20/1	0		SPARE	52	20/1	0		SPARE
53	20/1	0		SPARE	54	20/1	0		SPARE

	CONN. KVA	CALC. KVA		CONN. KVA	CALC. KVA
LIGHTING	4.81	6.01 (125%)	HVAC	27.6	34.5 (125%)
LARGEST MOTOR	17.5	21.8 (125%)	ELEC HEAT/WH	19.1	19.1 (100%)
OTHER MOTORS	23.8	23.8 (100%)	EQUIPMENT	5.2	5.2 (100%)
RECEPTACLES	6.78	6.78 (50%*10)	KITCHEN EQUIP	0	0 (N/A)
COMPUTER	0	0 (100%)	EXISTING LOAD	0	0 (N/A)
FUTURE	0	0 (100%)	TOTAL KVA	105	117
			BALANCED THREE PHASE AMPS	325	

GENERAL NOTES:
SQUARE 'D' TYPE "NQ" PANELS
22K AIC SERIES RATED "OOB"
BOLT-ON BREAKERS
GROUND BAR KIT

PANEL: S MAIN BKR 100 BUS AMPS 100 FED FROM P VOLTS: 208/120V 2P 3W
NEUTRAL: 100% MOUNTING SURFACE LUGS: STANDARD LOCATION: LIFE GUARD BLDG

DKT #	AMPS / P	LOAD KVA	RACEWAY / CONDUCTORS	CIRCUIT DESCRIPTION	DKT #	AMPS / P	LOAD KVA	RACEWAY / CONDUCTORS	CIRCUIT DESCRIPTION
1	20/1	0.72	3/4"C,1#12,#12N,#12G	RECEPTACLE	2	20/1	0.54	3/4"C,1#12,#12N,#12G	RECEPTACLE
3	20/1	0.36	3/4"C,1#12,#12N,#12G	RECEPTACLE	4	20/1	0.2	3/4"C,1#12,#12N,#12G	LIGHTING, PADDLE FAN
5	20/1	0.1	3/4"C,1#12,#12N,#12G	LIGHTING	6	20/1	0.2	3/4"C,1#12,#12N,#12G	LIGHTING, PADDLE FAN
7	20/1	0.06	3/4"C,1#12,#12N,#12G	LIGHTING	8	30/2	4.1	3/4"C,2#10,#10G	EW12
9	15/2	2.16	3/4"C,2#12,#12G	CU-1	10				
11	20/1	0		SPARE	12	20/1	0		SPARE
13	20/1	0		SPARE	14	20/1	0		SPARE
15	20/1	0		SPARE	16	20/1	0		SPARE
17	20/1	0		SPARE	18	20/1	0		SPARE

	CONN. KVA	CALC. KVA		CONN. KVA	CALC. KVA
LIGHTING	0.36	0.45 (125%)	HVAC	2.16	2.7 (125%)
LARGEST MOTOR	0	0 (125%)	ELEC HEAT/WH	4.1	4.1 (100%)
OTHER MOTORS	0	0 (100%)	EQUIPMENT	0.2	0.2 (100%)
RECEPTACLES	1.62	1.62 (50%*10)	KITCHEN EQUIP	0	0 (N/A)
COMPUTER	0	0 (100%)	EXISTING LOAD	0	0 (N/A)
FUTURE	0	0 (100%)	TOTAL KVA	8.44	9.07
			BALANCED PHASE AMPS	43.6	

SQUARE 'D' TYPE "NQ" PANELS
22K AIC SERIES RATED "OOB"
BOLT-ON BREAKERS
GROUND BAR KIT

LUMINAIRE SCHEDULE

SYMBOL	TYPE	MANUFACTURER/MODEL	LAMPS	VOLTS	BALLAST	MOUNTING	DESCRIPTION	REMARKS	NOTES
□	A	KENALL: MLHAB-48-R-xx-PP-45L40K-DCC-120	(1) 50W LED	120	L2	CEILING/SURFACE/GYP	1x4 LED WRAP	1	
○	C	KENALL: MR13CL-PP-xx-18L40K-1-DCC-120	(1) 20W LED	120	L2	WALL/SURFACE	ROUND SHALLOW SURFACE MOUNT LED	1	
—	J	KENALL: MLHAS-48-R-xx-PP-1-45L40K-DCC-1-120	(1) 50W LED	120	L2	CEILING/SURFACE/GYP	4' LED INDIVIDUAL	1	
✖	PF	HUNTER: CLASSIC ORIGINAL 23855		120		CEILING/SURFACE/GYP	PADDLE FAN		

GENERAL NOTES:
CONTRACTOR SHALL VERIFY VOLTAGE AT SITE. VOLTAGE OF NORMAL AND EMERGENCY LUMINAIRES MAY VARY.
REMARKS:
1. FINISH AS SELECTED BY THE ARCHITECT FROM MANUFACTURER'S SELECTIONS.

BALLAST TYPES:
L2 - 0-10V DIMMING LED DRIVER

WIRE & CONDUIT SCHEDULE

• CONDUCTORS SHALL BE THHN/THWN-2, 600V INSULATED COPPER, UNLESS NOTED.
• 'QTY.' INDICATED NUMBER OF PARALLEL RUNS OF CONDUIT AND WIRE.
• 'O.C.P.' INDICATES OVERCURRENT PROTECTION RATING.

TAG	QTY.	CONDUIT	CONDUCTORS				FEEDER AMPACITY (O.C.P.)	REMARKS
			PHASE	NEUTRAL	GROUND	NOTES		
(A)	(1)	4"	(3) #600	(1) #600			400A	
(B)	(1)	1-1/4"	(2) #2	(1) #2	(1) #8		100A	

NOTES:
A. CONDUCTOR SIZE BASED ON VOLTAGE DROP CONSIDERATIONS.
B. CONDUCTOR SIZE BASED ON AMBIENT TEMPERATURE ADJ. FACTOR.
C. CONDUCTOR SIZE BASED ON NUMBER OF CONDUCTORS IN RACEWAY.



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